Interrelationships between Unemployment and Self-Employment and the Role of Start-Up Incentives

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To my daughter Martha.

"Es ist wichtiger, etwas im Kleinen zu tun,
als im Großen darüber zu reden."

— Willy Brandt (1913 - 1992)

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List of Abbreviations

ABG	Landkreis Altenburger Land
ACCRE	L'aide aux chômeurs créateurs ou repreneurs d'entreprise
ALMP	Active Labor Market Policies
AP	Landkreis Weimarer Land
cf.	cōnfer (compare)
Chi2	Chi-squared test
c.p.	ceteris paribus (other things equal)
DAAD	Deutscher Akademischer Austauschdienst
DEGURBA	Degree Of Urbanisation
EA	Kreisfreie Stadt Eisenach
EF	Kreisfreie Stadt Erfurt
EG	Einstiegsgeld
e.g.	exempli gratia (for example)
EIC	Landkreis Eichsfeld
ESF	European Social Fund
EU	European Union
EUR	Euro
et al.	et alii (and others)
EXI	Existenzgründerrichtlinie
FEA	Federal Employment Agency (Bundesagentur für Arbeit)
FTE	Full time equivalent
G	Kreisfreie Stadt Gera
GDP	Gross Domestic Product
GFAW	Gesellschaft für Arbeits- und Wirtschaftsförderung Thüringen

GRZ	Landkreis Greiz
GTH	Landkreis Gotha
GZ	Gründungszuschuss
f.	following
H0	Null hypothesis
HBN	Landkreis Hildburghausen
HGF	High-growth firms
i.e.	id est (that is)
IK	Landkreis Ilm-Kreis
ISCED	International Standard Classification of Education
J	Kreisfreie Stadt Jena
Jan.	January
KFW	Kreditanstalt für Wiederaufbau
KYF	Landkreis Kyffhäuserkreis
LAU	Local Administrative Unit
LR	Likelihood ratio
Max	Maximum
Min	Minimum
NB	No beneficiaries
NDH	Landkreis Nordhausen
No.	Numero (numbers)
Nr.	Number
NUTS	Nomenclature des unités territoriales statistiques
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
p	P-value
p.	Page
pp	Percentage points
P50	Median
Q1	First quartile
Q3	Third quartile
R2	Coefficient of determination

S	Start-up
SD	Standard Deviation
SGBII	German Social Code II
SGBIII	German Social Code III
SHK	Landkreis Saale-Holzland-Kreis
SHL	Kreisfreie Stadt Suhl
SLF	Landkreis Saalfeld-Rudolstadt
SM	Landkreis Schmalkalden-Meiningen
SÖM	Landkreis Sömmerda
SOK	Landkreis Saale-Orla-Kreis
SON	Landkreis Sonneberg
T	Treatment
ThürStAnz	Thuringian government gazette (Thüringer Staatsanzeiger)
TSCS	Time-Series Cross-Section
UB	Unemployment benefit
UH	Landkreis Unstrut-Hainich-Kreis
UK	United Kingdom
Unempl.	Unemployment
USA	United States of America
vs.	versus
WAK	Landkreis Wartburgkreis
WE	Kreisfreie Stadt Weimar

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Co-Authorship and Statement of Contribution

Chapters 2, 3 and 4 are based on three single-authored yet unpublished papers.

Chapter 5 is based on joint work with Tina Haussen (Department of Economics at the University of Jena). While I initiated the research question of this chapter, Tina Haussen's contribution to the data collection as well as the preparation and implementation of the empirical analysis is larger than mine. However, Tina Haussen's and my contribution to the writing of the paper are about equal.

Even if the papers of Chapters 2, 3 and 4 are single-authored, the term "we" is used in the whole thesis for a better reading comprehension and to draw the reader into the discussion at hand.

Chapter 1

Introduction

1.1 Introductory remarks

While reading Bertolt Brecht's (2016) play "The Good Person of Szechwan",[1] many parallels can be found to the current economic discussion about business start-ups out of unemployment and the role of governmental start-up incentives in this context.

The key figure of the play is Shen Teh, a woman who lives in the Chinese province of Szechwan. Like many other people in the region, Shen Teh lives in great poverty and is *unemployed*. That is, even though she is available for work and seeking work, she is neither in paid employment nor is she self-employed (International Labour Organization, 1982; OECD, 2018).

As the poverty in Szechwan "is too much for any individual to correct" (Brecht, 2016, p. 99), another group of actors – the gods – are introduced in the play. These gods, mandated by a resolution, look for good

[1] The play, written in 1938-1941 and first produced in the Zürich Schauspielhaus on 04.02.1943, is explicitly designed as a parable, which means that there is both a factual and an interpretational level. In this dissertation, we use Brecht's (2016) play exclusively to present basic concepts that are important for the understanding of this thesis. The interpretative or normative question of the play, namely how capitalism influences a society's moral beliefs, is not in the focus of this work but is left for the growing research area of social and sustainable entrepreneurship (see e.g. Bornstein, 2007; Short et al., 2009; Thompson et al., 2011; Muñoz and Cohen, 2018).

persons in the world and are then introduced to Shen Teh. When they see the great poverty in which Shen Teh lives, the gods decide to give her a gift in the form of money. Shen Teh uses the money to found a small tobacco shop. As a result, her employment status changes from unemployed to *self-employed*, comprising all working persons who perform work for profit or family gain, in cash or in kind (International Labour Organization, 1982; OECD, 2018). The intention of the gods behind this financial support is that she can thereby improve her living condition and better seize chances available to her. That is, an external stimulus by a higher authority in kind of a *start-up subsidy* is given to put an end to an individual's unemployment situation by starting-up.

After various confusions of action in the play, the good person Shen Teh realizes that her generosity diminishes the economic success of her recently founded start-up. Moreover, she lacks the necessary negotiating skills and the needed assertiveness, e.g. in order to delay the payment of outstanding receivables and encourage people to work. As, "traditionally at least, women are not so integrated in the commercial world as men are" (Brecht, 2016, p. 50), she pretends to be her own male cousin Shui Ta. In this role as a male businessperson, and with hard methods, she manages to transform the unsuccessful small retail shop into an economically successful tobacco factory. The factory is running so successfully that Shui Ta even becomes an employer for other, formerly unemployed people from Szechwan. In this way, the business founded by Shui Ta contributes to reducing unemployment in the region, however, the methods she uses are questioned by the people of Szechwan and the gods.

1.2 Structure of this thesis

Although probably unintentionally, "The Good Person of Szechwan" introduces important questions of the current entrepreneurship and active labor market policy (ALMP) research. Some of these research questions are also addressed in this dissertation, which deals with the interrelationship between unemployment and self-employment and the role of governmental start-up incentives for unemployed persons.

Just as the gods in Brecht's (2016) play offer the unemployed Shen Teh financial support with which she becomes self-employed, in many developed countries, i.e. Europe, there are considerable (financial) start-up incentives[2] "that promote entrepreneurship by encouraging the unemployed [...] to start their own business or to become self-employed" (OECD, 2015, p. 3).[3] Although, in recent years start-up subsidies for the unemployed have become a broadly discussed and implemented instrument of ALMP (OECD and European Commission, 2014; Eurofound, 2016), data and evaluation studies thereon are scarce (Caliendo, 2016; Dvouletỳ and Lukeš, 2016) – especially at the regional level. Analyzing detailed information on the characteristics of unemployed persons, the types of businesses started and the resulting economic outcomes is important to determine whether public investment in the measure pays off. In Chapter 2 of this thesis, we fill some of this data gap by introducing a novel dataset covering all beneficiaries of the regional start-up incentive program for unemployed persons *Existenzgründerrichtlinie* (*EXI*) in the German federal state of Thuringia. In addition to the description of the data set, we offer descriptive statistics on the

[2] See Chapter 4 for a broad overview about the existing measures.

[3] The terms "start-up incentives for unemployed persons" and "start-up subsidies for unemployed persons" are used synonymously in this thesis and correspond to the OECD (2015) definition.

characteristics of the founders and their companies. In all statistics, we compare these characteristics to those of beneficiaries of other start-up subsidy measures as well as all unemployed persons in the respective region. Additionally, descriptives are presented separately for men and women.

The fact that, as in "The Good Person of Szechwan", the small tobacco start-up is so profitable that it eventually turns into a tobacco factory with employees symbolizes the so-called "double dividend" of start-up incentives for unemployed persons (Caliendo, 2016). That is, beyond the individual effect that the subsidy has brought an unemployed person into the labor force, the newly started firm may also generate indirect employment effects (Hart and Oulton, 1999; Caliendo and Künn, 2011; Román et al., 2013; Nightingale and Coad, 2013; Althammer and Lampert, 2014; Caliendo and Künn, 2015). However, it is not certain that this effect on employment will actually appear, because the subsidies can also have negative effects (Calmfors and Skedinger, 1995; Santarelli and Vivarelli, 2007). For example, the cost advantages generated by subsidies may crowd out established businesses, which, in turn, could increase unemployment. In Chapter 3, we use the data introduced in Chapter 2 to test whether and how start-up subsidies for the unemployed lead to a decline in the regional unemployment rate. Further, we analyze whether the effect on unemployment rates depends on the level of unemployment and what role the founders' individual characteristics play in this respect.

In the play, the financial support is considered as "a gift from the gods" (Brecht, 2016, p. 96) to a selected unemployed individual, i.e. Shen Teh. When allocating the funds, the gods themselves are bound by a corresponding resolution. In economics and policy research, this is related to the question of policy design in which it is necessary to define

what are the political objectives and eligible individuals or what kind of support with how much financial benefit should be given. Therefore, Chapter 4 reviews the relevant literature that deals with corresponding funding instruments for start-up support out of unemployment. On this basis, existing measures are compared in terms of their eligibility criteria and outcomes received. The aim is to identify the most relevant research questions on the topic of start-up incentives for unemployed persons, which go beyond the scope of this dissertation.

Similar to Brecht's (2016) play, in which the tobacco shop almost goes bankrupt under the leadership of the caring but also naive female Shen Teh, but flourishes under the leadership of the unemotional and pragmatic male Shui Ta, in today's real world there is strong evidence of gender gaps in the preferences to found a business and its economic success (see e.g. Verheul et al., 2012). Given this observation on the micro level, in Chapter 5 of this thesis, we use country-level data to ask whether self-employment in general – without considering possible subsidies – leads to a reduction of unemployment and whether this effect depends on the gender of the self-employed. We are also looking into the reverse context, namely how the level of unemployment in a country can affect the rate of self-employment; and whether gender also has an impact here.

Chapter 6 concludes the thesis.

Chapter 2

Start-Up Subsidies for the Unemployed – The Case of a Regional Program in Germany

"THE SECOND GOD: [...] We cannot meddle in the sphere of economics.
THE THIRD GOD: Wait! Just a minute. If she were better provided she might stand more chance.
THE SECOND GOD: We cannot give her anything. We could not answer for it up there.
THE FIRST GOD: Why not? [...] *He gives her money.* [...]
SHEN, TEH: I have used the money to buy a tobacconist's business. I moved in here yesterday, and now I hope to be able to do a great deal of good."

— Brecht (2016, p. 87f.)

Abstract.[4] With the exception of Germany, data about start-up subsidy programs for the unemployed are rather scarce. However, even in Germany evaluation studies are far from complete and comprehensive, as important regional start-up support measures have complemented federal programs. Being a connective link to the previously analyzed policies of the *Gründungszuschuss* and *Einstiegsgeld*, the regional start-up subsidy of the *Existenzgründerrichtlinie*, presented in this paper, is a valuable supplement to the existing literature. For this purpose, descriptive statistics based on full data of the policy with a remarkably high number of observations are presented. Further discussed are the characteristics of the formerly unemployed persons and types of businesses started in the light of determinants identified by the literature so far. In this context the institutional framework of these kind of policies in Germany is

[4] I am grateful to Prof. Dr. Heike Grimm, Dr. Tina Haussen and Lee Drewitz as well as the participants (i.e. two anonymous referees) of the 2017 Interdisziplinäre Jahreskonferenz zu Entrepreneurship, Innovation und Mittelstand (G-Forum) in Wuppertal, Germany for many helpful discussions and suggestions. The presentation of the paper in Wuppertal, Germany has been financially supported by the Thüringer Aufbaubank.

described and the interdependencies with the selection process of participants are illustrated.[5]

2.1 Introduction

In a recent literature review, Dvouletỳ and Lukeš (2016) show that data about start-up subsidy programs for the unemployed are scarce. Due to missing data and therefore insufficient scientific monitoring, economic research has failed to keep up with the times as this kind of active labor market program (ALMP) as well as entrepreneurship policy has become a broadly discussed and implemented instrument by policy makers in recent years (OECD and European Commission, 2014; Eurofound, 2016). Even in Germany, where data availability is comparatively most extensive, evaluation studies are far from complete and comprehensive, especially because only federal start-up measures are analyzed (see e.g. Caliendo and Kritikos, 2010; Caliendo et al., 2012; Wolff and Nivorozhkin, 2012; Caliendo et al., 2015; Wolff et al., 2016; Bellmann et al., 2017). However, there are also regional start-up subsidy programs that complement the corresponding federal ones, which are in terms of participation and financial expenditure partly more important than the federal funding instruments. Further, this focus of research on federal programs leads to a lack on regional studies to date. These are of particular interest as entrepreneurship policies as well as labor market policies have a local effect, are often designed at the local or regional level and should, at best, complement federal programs with a special focus on regional settings (Audretsch et al.,

[5] JEL-Classification: L26; J08; L53; M13; O12. Keywords: Regional Policy; Start-Up Subsidy; Unemployment; Entrepreneurship

2007; Szerb et al., 2013; Stam and Bosma, 2015).

In this paper we introduce a unique and above all full data set on the regional start-up subsidy of the *Existenzgründerrichtlinie* (*EXI*) – a regional support programme of the German federal state of Thuringia for unemployed persons who are willing to set up their own business. The policy of EXI is a valuable supplement to the existing literature since only if researches have as full a picture as possible of the existing measures, will comparative studies result in more valuable and more precise findings. In addition to presenting the measure itself, this paper is intended to provide detailed descriptive statistics. In particular, we compare EXI subsidized start-ups with non-subsidized start-ups and other unemployed persons. All descriptive results are discussed in the light of characteristics of founders and determinants of start-ups identified by the literature so far. Furthermore, since policy makers, especially, need a better understanding of different target-groups for appropriate policy design (Rodríguez-Planas, 2010), we try to fill the existing gaps to some extent, creating a starting-point for further research in more holistic approaches considering all relevant start-up subsidies in Germany.

The descriptive statistics of EXI, presented in this paper, do not seek to identify causal relationships. However, the data demonstrate that the formerly unemployed business owners significantly differ from the reference group of all unemployed persons, participants of other start-up subsidies as well as from all other businesses started in Germany. EXI is exceptionally attractive for women, as they account for almost half of the businesses start-ups. Moreover, EXI-owners have an above-average education compared to all unemployed persons and the start-up subsidy is a favorite instrument of migrants to overcome their financial constraints due to credit rationing and labor market discrimination. The businesses are, however, mainly started in less promising industries

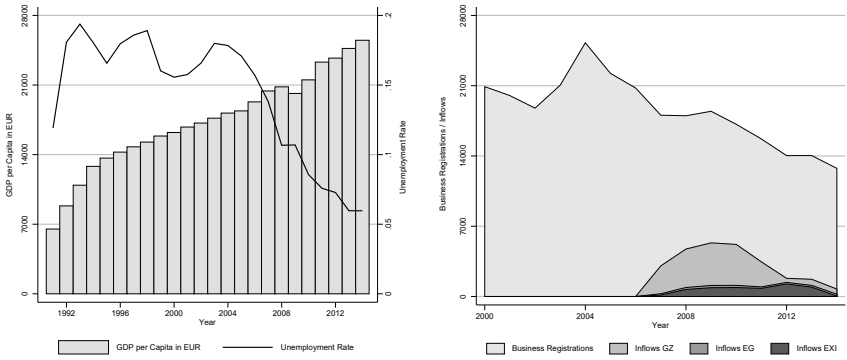
with comparatively high competition and exit-rates. Nevertheless, the businesses managed to achieve a one-year survivability rate above 90%, showing that the recipients usually stay in the program until the end of the maximum subsidy period. Slight indirect employment effects are also identified.

The paper is structured as follows: In Section 2.2 the institutional framework is described, beginning with a description of area of study in Section 2.2.1. The relevant start-up subsidies including EXI's program features and the regulatory environment are presented in Section 2.2.2. The data and descriptive statistics are illustrated in Section 2.3, where characteristics of the formerly unemployed business owners, their start-ups as well as short-term survival rates and indirect employment effects are discussed. Section 2.4 summarizes and concludes the findings.

2.2 Institutional framework

2.2.1 Description of area of study – Thuringia

Among Germany's sixteen federal states *(Länder)*, the area of study, Thuringia *(Thüringen)*, is the fifth smallest (2014: 2.157 million residents) by population and sixth smallest by area (2014: 16.173 square kilometers). Thuringia is Germany's most central federal state and belongs to the former East Germany. Since German reunification in 1990 the Thuringian economy has experienced recurring changes (see Figure 2.1a).



(a) GDP per capita in EUR and unemployment rates

(b) Business registrations and inflows into start-up subsidy policies

Figure 2.1: Economic indicators of Thuringia

Notes: In Figure 2.1a the development of GDP per capita in EUR as well as the unemployment rates between the years 1991 and 2014 in Thuringia are illustrated. In Figure 2.1b business registrations since 2000 as well as annual inflows into the measures *Gründungszuschuss (GZ)*, *Einstiegsgeld (EG)* and the *Existenzgründerrichtlinie (EXI)* between the years 2007 to 2014 are illustred.

Sources: Federal Statistical Office of Germany, Thuringian Statistical Office, Statistics of the FEA and the GFAW; authors' own calculations and illustrations.

With the exception of the economic crises in 2009 the GDP (at purchasing power parity) per capita steadily increased and reached 25.504 EUR in 2014. This is 29% below the average for all of Germany and the third lowest of any German state (2014 average: 35.908 EUR). Despite this, the unemployment rate sits at only 6% and is middling among the federal states. Since the 1990's to the middle of the last decade, Thuringia suffered through persistently high unemployment rates of up to 19%. However, since that time the unemployment rates sharply decreased with the prospect of achieving full employment soon. Also the business registrations dropped by half since 2004 (Figure 2.1b). This decline coincides with the introduction of the "Hartz-reforms" in the year 2003, which aimed to make the labor market more dynamic (Fahr

and Sunde, 2009).

2.2.2 Description of policies

Especially during the early phase of the implementation of the Hartz-reforms, start-up support for the unemployed fostered the formation of new businesses. The federal government of Germany complemented its existing measure called "bridging allowance" *(Überbrückungsgeld)*, which was implemented in the 1980's, with the "start-up subsidy" (*Existenzgründungszuschuss*; Caliendo and Kritikos, 2010; Caliendo and Künn, 2011). The government replaced these programs with the *Gründungszuschuss* (*GZ*) in the year 2006. All of these policies targeted mainly unemployed persons with recent job-experience and who were still eligible for unemployment benefits. For unemployed persons more in need of assistance, the government implemented the *Einstiegsgeld* (*EG*) in 2005, which was an incentive program to encourage self-employment (Wolff and Nivorozhkin, 2012; Wolff et al., 2016).[6]

Additionally and unique in Germany, the state of Thuringia created a regional "business start-up policy" (EXI) to go along with the GZ and EG.[7] All three policies have a very close mutual relationship as the German Social Code links them together. In sum, about a fifth of all business registrations in Thuringia between 2007 and 2011 were by formerly unemployed persons, receiving support by GZ, EXI or EG. As displayed in Figure 2.1b, from 2007 until 2011 GZ was the more frequented benefit, while after that EXI exceeded GZ in its importance

[6] In fact, the grant also was paid to unemployed persons if a contributory employment was taken up. However, according to Wolff and Nivorozhkin (2012) this was only observed for 15% of the measure participants.

[7] For an comprehensive overview about other different policies for entrepreneurship as well as small and medium enterprises and their funding in Thuringia, refer to Grimm and Jaenicke (2012).

for businesses registrations. During that time, the number of participants receiving EG is below the other measures, accounting for only 1% of total business registrations. Table 2.1 summarizes the three policies. Even if this paper focuses on the introduction of EXI, due to its relationship to the other funding instruments, it is necessary to first gain an understanding of GZ and EG.

2.2.2.1 Gründungszuschuss

The economic literature has already dealt extensively with the GZ start-up subsidy (see Caliendo et al., 2015, but also Caliendo and Kritikos, 2009; Caliendo et al., 2012; Bernhard and Grüttner, 2015; Caliendo et al., 2016; Bellmann et al., 2017). The Federal government started and administrated it through the Federal Employment Agency (*Bundesagentur für Arbeit* – hereinafter *FEA*). Introduced in 2006, GZ dealt with all German unemployed persons who received unemployment benefits I from the German Social Code III (*Sozialgesetzbuch III* – hereinafter *SGBIII*). When entering unemployment, the jobless receive unemployment benefits I from the SGBIII (hereinafter UB (SGBIII)), so long as they are registered at the FEA and paid unemployment insurance contributions for a qualifying period. Additionally, eligibility for UB (SGBIII) depends on the previous working income of the unemployed. One is qualified for payments only if the benefits are higher than the calculated basic security benefit. Typically, financial support from SGBIII lasts for twelve months.

During an initial nine months phase, participants of GZ receive the amount of their former UB (SGBIII) as a start-up subsidy comple-

mented by a lump sum payment of 300 EUR per month.[8] To receive GZ, the formerly unemployed persons' claim on UB (SGBIII) has to exceed 90 days of support. Furthermore, there is an optional extension of support for another six months and again 300 EUR. Approval is, however, determined by the FEA. Another noticeable entry condition of the GZ is the submission of a business plan, which an independent expert authority reviews. The local chamber of commerce or representatives of industry and trade groups mainly constitute these authorities. They also have to assess the expected sustainability of the proposed start up.

Interestingly, until December 2011, unemployed persons could make a claim for the subsidization of the first program phase, if they fulfilled the above mentioned entry conditions. Since then, the start-up subsidy has shifted to a nonobligatory service. Since this policy shift, administrators of the FEA are responsible and have to decide for or against support of applicants. In addition, the remaining claim for unemployment allowance has to exceed nine months from that date. Finally, the initial phase of GZ was reduced to six months and the extension phase was extended up to nine months. Shortening the benefit durations, it was the FEA's intention to save around one billion EUR per year for whole of Germany (Caliendo et al., 2012).

2.2.2.2 Einstiegsgeld

The EG is an active labor market instrument of the Social Code 2 (*Sozialgesetzbuch II* - hereinafter *SGBII*). Since 2005 payments of SGBII (*social benefits / unemployment benefits II* - hereinafter *UB (SGBII)*) act as a basic security benefit for job seekers and are means-

[8] The UB (SGBIII) amounts to 60% of the last net income before unemployment occurred. To acquire a right to unemployment allowance, payments have to have been settled in the last six months of employment.

tested. Additionally, it supports the recently unemployed whose former labor income and current wealth does not exceed defined thresholds.[9] Additionally, UB (SGBIII) receivers, who do not find a job within twelve months (long-term unemployed) as well as individuals who have never worked before or who have not contributed to unemployment insurance (e.g. self-employed), shift to the reception of SGBII.

All unemployed persons, who receive benefits of the SGBII, are eligible for the EG, which gives them, for a period of up to 24 months, an additional payment to their UB (SGBII). The FEA decides upon the amount of the start-up subsidy, which should not exceed more than 100% of the basic benefit payment.[10] Typically, it should not be more than 50%. Duration of the eligible period and the amount of the subsidy depend on the duration of the previous unemployment period and the current employability of the unemployed. Pongratz et al. (2013) demonstrate, that the average participant received 192 EUR in 2007 (230 EUR in 2011) and received support for less than seven months. Since May 2008 again an independent external source must approve business plans, formerly a responsibility of the FEA.

2.2.2.3 Existenzgründerrichtlinie

The EXI complemented the GZ and EG. The policy was in place between August 2007 and December 2014. EXI was unique and regionally limited to unemployed persons in the federal state of Thuringia. With the GZ and EXI being mutually exclusive, only those UB (SGBIII) re-

[9] The claim on welfare payments is basically unlimited, but the Social Code postulates that recipients need to show effort to get employed, if they are able to work. The tax-based payments cover the costs of living (lump sum payment per month) and housing. Generated income and acquired assets, which exceed an exemption limit, diminish payments.

[10] This was in the year 2007 a monthly payment of 347 EUR. Until 2014 the amount continuously increased to 391 EUR.

cipients, whose GZ application failed, could receive EXI. That is, due to the obligatory service of GZ until the end of 2011, EXI was only offered to those unemployed persons receiving payments of the SGBII or without any public support (*no beneficiaries* - hereinafter *NB*) at that time. Since then, it was also opened to UB (SGBIII) receivers. Furthermore, simultaneously receiving EG and EXI was allowed.

Besides, EXI recipients could receive benefits for twelve months after founding a business from a lump sum payment of 600 EUR per month, without the possibility of extension. This measure was not changed during program period. Like GZ, independent expert authorities had to evaluate the submitted business plans and comment on the expected sustainability before starting up. The measure was mainly financed through the European Social Fund (ESF) with local authorities being responsible for administration and control over the subsidies.

Neither GZ, EG nor EXI are subject to personal income tax, that is, all increase earnings in gross and net terms. Statutory pension insurance is not mandatory. For the EXI applicants, the state provides health and nursing insurance. When receiving GZ, individuals, however, have to insure privately.

Table 2.1: Comparison of policy frameworks – start-up subsidies for the unemployed

	Gründungszuschuss (GZ)	*Einstiegsgeld (EG)*	*Existenzgründerrichtlinie (EXI)*
Policy Level	Federal	Federal	Regional
Regulation in force (time)	08/2006 – ongoing	01/2005 – ongoing	07/2007 – 12/2014
Necessity of registration for unemployment	Yes	Yes	Yes
Obligatory service	Until 12/2011: yes since 01/2012: no	No	No
Eligible beneficiary	I. benefit recipients (SGBIII)	I. benefit recipients (SGBII)	I. benefit recipients (SGBII) II. non-recipients of benefits since 01/2012: III. benefit recipients (SGBIII) with denial on GZ
Period of eligibility (+extension period)	Until 12/2011: 9 months (+6 months) since 01/2012: 6 months (+9 months)	Up to 24 months (variable)	12 months no extension
Financial support	Unemployment benefit (SGBIII) + 300 EUR per month	Unemployment benefit (SGBII) + up to 100% (variable) of basic benefit (2007: 347 EUR per month)	600 EUR per month + (unemployment benefit (SGBII))
Approval of business plan by an independent source (extern)	Yes	Until 05/2008: no since 06/2008: yes	Yes
Social security	No (private)	Yes (health and long term care)	Yes (health and long term care)
Subsidy is part of the assessment basis for personal income tax	No	No	No
Details	Until 12/2011: § 57 SGBIII since 01/2012: § 93 SGBIII	Until 12/2008: § 29 SGBII since 01/2009: § 16b SGBII	ThürStAnz Nr. 36/2007, p. 1717f. ThürStAnz Nr. 12/2009, p. 549f. ThürStAnz Nr. 20/2011, p. 699f.

Notes: Explanation of abbreviations: SGBII – German Social Code 2, SGBIII – German Social Code 3, ThürStAnz – Thuringian government gazette.
Source: Authors' own illustrations.

2.3 Descriptive statistics of EXI

2.3.1 Data and method

This paper is intended to introduce a new, unique data set of businesses and their owners based on the administrative data of a regional Thuringian Agency for Employment and Economic Promotion (*Gesellschaft für Arbeits- und Wirtschaftsförderung Thüringen* (hereafter: GFAW)). The data is unique since we observe the full population (5,636) of formerly unemployed business owners receiving the EXI start-up support who started their businesses between 2007 and 2014. In the dataset, characteristics of business owners and their start-ups are measured at the application date for the start-up support.

In the following sections descriptive statistics[11], i.e. sample means, of the variables in our dataset are shown.[12] Due to the selection process of GZ and EXI, presented in section 2.2.2, we split the descriptive results into several classes. Specifically, we show the variables for a group of unemployed persons receiving no benefits at all or receiving social benefits / unemployment benefits II (SGBII) (hereafter: NB / UB (SGBII)) as well as a group of unemployed receiving unemployment benefits UB (SGBIII). The latter group corresponds to the beneficiary presented by Caliendo et al. (2015) in a study about GZ while the former is linked to the groups presented by Wolff and Nivorozhkin

[11] The importance of descriptive statistics for a later evaluation process is emphasized by Caliendo et al. (2016). The authors show that typical control variables for general socio-demographic information (age, education, gender, ...) are sufficient to adequately control for personality traits (conscientiousness, extroversion, agreeableness, neuroticism, openness, locus of control, risk aversion), which, in turn, can have an impact on the motives for setting up a business and the effectiveness of a program.

[12] Due to the missing ex-post evaluation of the measures, it was not possible to form a sufficient reference group to calculate an average treatment effect by means of a difference-in-difference approach.

(2012) for EG.

In a second step, we follow the method of Caliendo and Kritikos (2010) as differences are quantified using cross tabulations. By that, the two groups of unemployed persons are separated by gender because of the predominant finding in the economic literature, that the share of businesses run by women are significantly lower compared to men and are characterized by different start-up patterns (e.g. Bates, 1995; Blanchflower, 2000; Bergmann and Sternberg, 2007; Koellinger et al., 2013).

A special feature of this paper is that it does not build upon a drawn sample but on full data. As a result, it is not necessary to present t-tests for mean differences to a statistical significance level as the actual differences of means in the four distinct groups can be provided. Significant differences in the results should therefore not be regarded as an expression of a statistical significance, but rather as an economically relevant difference. To show these significant differences, we present differences of means in the variables between men and women being NB / UB (SGBII) (d_1), men and women receiving UB (SGBIII) (d_2), men in both unemployment groups (d_3) as well as women in both unemployment groups (d_4).

Where it is appropriate, we compare results with the annual average of the years 2007 to 2014 of all German start-ups[13] and the corresponding population of all unemployed persons.[14]

[13] Data is received from the publications of the KFW-Gründungsmonitor (Kohn and Spengler, 2008, 2009, Kohn et al., 2010, Hagen et al., 2011, 2012, Metzger and Ullrich, 2014, Metzger, 2014, 2015).

[14] The full data is received from official unemployment statistics by the FEA of the federal state of Thuringia during that time.

2.3.2 Characteristics of business owners

2.3.2.1 Socio-demographic background of business owners

In Table 2.2 descriptive data about the socio-demographic background of the participants is presented. At first, we observe an exceptionally high share of female participation in EXI (56% male, 44% female) compared to all full-time self-employed in Germany (66% male and 34% female according to the KFW-Gründungsmonitor). On the one side, one might attribute this to the higher labor market participation rate of women in East Germany, as dual-earner couples are more common (Hofäcker et al., 2013; Caliendo and Künn, 2015).[15] In more comprehensive analyses Caliendo and Kritikos (2010) as well as Caliendo and Künn (2015) outline for Germany that a more evenly distributed population of supported male and female business owners may be a result of different motives for start-up and the interrelationship with regard to policy design. Women use self-employment more frequently to generate additional household income, they are more often married, have more children, and are more reluctant to work full-time (see e.g. Leoni and Falk, 2010; Lechmann and Schnabel, 2012; Simoes et al., 2016). This might also be important in the case of EXI, since business start-ups only have to be the main occupation, not necessarily a full-time job. Less restrictive eligibility criteria were also shown by the authors to be supportive in reintegrating unemployed women into the labor market. Interestingly, Wolff et al. (2016) show for the EG and recipients of UB (SGBII) that only 22% of the participants were female in all of Germany. In EXI, eligibility criteria are comparatively

[15] Note, that also the male/ female ratio of unemployed is approximately one (see Table 2.A1) between the years 2007 and 2014 in the observed federal state. Compared to that, the business owners are slightly more unequally distributed.

less restrictive for the NB / UB (SGBII) group, where both genders are approximately evenly distributed (54% male, 46% female), while the business owners receiving UB (SGBIII) are predominantly male (63% and 37%, respectively). To be eligible for UB (SGBIII) an employment of twelve months with some kind of income has to be proven. Thus, reactivation is less important for that group, but restrictions by the German Social Code may work as an entry barrier. Also, the necessary denial on GZ requires tenacity in the start-up plans and contact to several agencies.

EXI-subsidized business owners are about 36.0 years old. This is line with the results found in the previous literature for Germany, as Hinz and Jungbauer-Gans (1999) found an average age of 39.3 for unemployed owners and Caliendo and Kritikos (2010) found an average of 37.7 to 39.4 (depending on gender and analyzed start-up subsidy). Table 2.2 and Figure 2.3 highlight the age distribution. In contrast to the average age, which is quite equal among the four groups, the density of the five generated age classes differs to some extent. While the groups of the mid-twenties to the mid-forties represent the most important classes of business owners (in all groups above 60%), start-ups founded by the youth (18 – 24 years) are significantly more relevant in the case of UB (SGBIII) than in NB / UB (SGBII). The resulting reverse u-shaped distribution of age on the x-axis and the relative density on the y-axis has its peak at the age of 25 to 40, which has also been shown by several empirical studies for Germany before (Pfeiffer and Reize, 2000; Caliendo and Kritikos, 2010; Caliendo et al., 2015) and by the KFW-Gründungsmonitor.

When concentrating on gender differences, the gender gap is the smallest in the youngest and oldest age categories, while it is more pronounced in the mid-age groups. However, overall the businesses founded

by women are slightly more equably distributed among the age groups indicating that age is of less importance. That the supported businesses are on average younger than the rest of the unemployed, can be seen in Table 2.A1. This and the u-shaped distribution of age and business formation rate can be attributed to two effects. At first, the frequency of business foundations are positively influenced by age. The older an individual gets, the higher that individual's endowment of social, financial and human capital, which is supportive for the start-up process (Simoes et al., 2016). However, at a certain threshold the propensity to start-up diminishes as the excepted returns by self-employment compared to paid employment are decreasing. Levesque and Minniti (2006) refer to the differences between waged labor, from which an individual receives income immediately, and self-employment, which needs an investment and from which future returns are expected. The shorter this period, the relatively more attractive waged labor compared to self-employment, causing the u-shaped distribution.

The above-average share of migrant self-employment compared to the entire population is a common issue in the literature (Borjas, 1986; Andersson et al., 2013; for Germany see Constant and Zimmermann, 2006), which can also be found in the EXI-dataset.[16] About 15.8% of the women and 18.8% of the men of NB / UB (SGBII) group are migrants. Compared to the UB (SGBIII) group (6.4% men and 5.6% women) this is a significant difference. Nevertheless, this is significantly above the share of migrants compared to all unemployed persons in Thuringia, as less than 3.6% have a migrant background (see Table 2.A1). Yet compared to the German average of migrant ownership, about 22% (see KFW-Gründungsmonitor), it is significantly

[16] In the present study, a person who is either Ethnic German (Spät-aussiedler), Foreigner (No German Citizenship) or German citizens who were born abroad are counted as migrants.

less. As the gap between men and women of the EXI-owners is remarkably smaller and only in the case of foreigners with no German citizenship of NB / UB (SGBII) significant, the results indicate that the start-up support is a much stronger incentive for unemployed persons receiving NB / UB (SGBII). The comparatively high share of migrant owners may be a result of several causes. An important aspect is possibly the state's provision of payment and the equal access for all beneficiary groups. The distributed grant helps to overcome liquidity constraints, as credit-markets typically tend to discriminate against migrants (Blanchard et al., 2008; Blanchflower, 2009; Bruder et al., 2011). Furthermore, migrants are also discriminated against in the dependent-employment sector. Not only are the wages offered for the same job lower than those to the natives (Clark and Drinkwater, 2000), which lowers the opportunity costs of becoming self-employed. But they are also discriminated as they are less likely to be hired simply because of the fact that they are migrants (Lavergne and Mullainathan, 2004; Weichselbaumer, 2017). Finally, in Germany, where self-employment is relatively scarce compared to international standards,[17] migrants "import" the self-employment culture of their home-countries. If migrants come from countries with comparatively high self-employment rates, it is more likely for them to become self-employed in their destination country (Hammarstedt and Shukur, 2009).

[17] For example, in the Global Entrepreneurship Monitor of the corresponding year (Bosma et al., 2008, p. 5) it is stated: "Some European countries – most notably Belgium, Germany and France – consistently have the lowest rates of entrepreneurial activity levels. This possibly reflects the relative risk aversion of European inhabitants and their declared relative preference for employment over self-employment."

Table 2.2: Socio-demographic background of the business owners

	No beneficiary / Social benefit / Unemployment benefit II (SGBII)		Unemployment benefit (SGBIII)		Differences of means[a]			
	Men (I)	Women (II)	Men (III)	Women (IV)	d_1 (I vs. II)	d_2 (III vs. IV)	d_3 (I vs. III)	d_4 (II vs. IV)
Age (in years)	36.68	36.96	36.11	36.98	0.28	0.87	−0.57	0.02
18 - 24 years	0.078	0.089	0.132	0.121	0.011	−0.011	0.054**	0.032
25 - 34 years	0.414	0.365	0.382	0.351	−0.049**	−0.032	−0.032	−0.015
35 - 44 years	0.272	0.301	0.250	0.253	0.029**	0.003	−0.022	−0.048**
45 - 54 years	0.174	0.189	0.184	0.227	0.016	0.044	0.010	0.038
55 - 66 years	0.062	0.055	0.052	0.048	−0.007	−0.004	−0.010	−0.007
Migrant	0.188	0.158	0.064	0.056	−0.030**	−0.008	−0.124**	−0.102**
Ethnic German (Spätaussiedler)	0.022	0.021	0.005	0.004	−0.001	−0.001	−0.017**	−0.017**
Foreigner (No German Citizenship)	0.129	0.107	0.039	0.035	−0.022**	−0.004	−0.090**	−0.072**
German citizens who were born abroad	0.037	0.030	0.020	0.017	−0.007	−0.003	−0.017**	−0.013
Disabled	0.029	0.023	0.024	0.019	−0.006	−0.004	−0.005	−0.004
Observations	2,351	2,028	795	462				

Notes: Characteristics are measured at the application date for the start-up support, based on administrative records. Numbers are shares unless otherwise stated.

[a] The ** indicate significant differences of means in the variables between men and women being no beneficiary or receiving social benefit / unemployment benefit II (SGBII) (d_1), men and women receiving unemployment benefit (SGBIII) (d_2), men in both unemployment groups (d_3) as well as women in both unemployment groups (d_4).

Source: Authors' own illustrations, based on administrative data from the GFAW.

Another socio-demographic aspect concerns disability.[18] Looking at the percentage of owners with a disability (see Table 2.2), it becomes clear, that in all groups about 2 to 3% are constrained in their life activities. The equally distributed share of business owners is an interesting finding, but the share is comparatively small and approximately half of the share of disabled compared to all unemployed persons (see Table 2.A1).

However, the small quantity, heterogeneity of definitions and data constraints due to the personal character of the disabilities linked with medical data protection, leads to the fact, that the existing literature on this topic is rather limited (Simoes et al., 2016). In one of the few existing studies, Pagán (2009) finds that self-employment of disabled as a percentage of the total employment is in Germany almost equally distributed between males and females (around 10%). This share is comparable with the non-disabled part of the population.

2.3.2.2 Qualifications and labor market history of business owners

Consistent with previous analyses of the German Labor Market and start-up support (Hinz and Jungbauer-Gans, 1999; Caliendo et al., 2012; Wolff et al., 2016), the formerly unemployed owners of EXI have a comparatively high degree of school education and job experience. To be clear, this is compared to all unemployed persons, not to the society as a whole (see Tables 2.3 and 2.A2).[19]

When looking at the school education level, only a minority of 1.0 to 2.5% have a ISCED-1 level (Primary / No Graduation) or another (not

[18] All kinds of disabilities (cognitive, developmental, intellectual, mental, physical, sensory, or some combination of these) are included.

[19] The classes are standardized to the ISCED-levels by the OECD et al. (2015).

classified) education among the fourth groups. The remaining participants have an ISCED-2 (Lower-Secondary) or ISCED-3 (Upper Secondary) schooling degree. However, differences between the two beneficiary groups of the unemployed are much more relevant than gender differences. Interestingly, men (75.2%) and women (69.0%) receiving UB (SGBIII) more often have an ISCED-2 degree in comparison to men (63.0%) and women (64.0%) of NB / UB (SGBII). Correspondingly, it is less common that UB (SGBIII) receivers have earned an ISCED-3 degree, which is why they are on average less educated than the NB / UB (SGBII) group. This is somewhat surprising, as the general population of unemployed persons in Thuringia shows a significant reverse pattern. Among all unemployed persons the UB (SGBII) recipients in Thuringia significantly less often receive the highest school educational level and have more often left school with no or only primary graduation (Table 2.A2).

Table 2.3: Qualification and labor market history of the business owners

	No beneficiary / Social benefit / Unemployment benefit II (SGBII)		Unemployment benefit (SGBIII)		Differences of means[a]			
	Men (I)	Women (II)	Men (III)	Women (IV)	d_1 (I vs. II)	d_2 (III vs. IV)	d_3 (I vs. III)	d_4 (II vs. IV)
General Education								
ISCED 1 - Primary / No Graduation	0.012	0.005	0.005	0.000	−0.007**	−0.005**	−0.007**	−0.005**
ISCED 2 - Lower Secondary	0.630	0.640	0.752	0.690	0.009	−0.062**	0.122**	0.051**
ISCED 3 - Upper Secondary	0.345	0.347	0.235	0.301	0.002	0.066**	−0.110**	−0.046
Other	0.012	0.008	0.008	0.009	−0.004	0.001	−0.005	0.000
Professional Education								
No Apprenticeship	0.088	0.060	0.036	0.015	−0.028**	−0.087**	−0.052**	−0.045**
ISCED 3 - Upper Secondary	0.027	0.033	0.010	0.041	0.006	0.007	−0.017**	0.009
ISCED 4 - Post-Secondary Non-Tertiary	0.526	0.498	0.639	0.552	−0.028	−0.021**	0.113**	0.054**
ISCED 5 - Short-Cycle Tertiary	0.094	0.115	0.166	0.184	0.021**	0.031**	0.072**	0.069**
ISCED 6 - Bachelor or equivalent	0.108	0.102	0.074	0.095	−0.006	0.021	−0.034**	−0.007
ISCED 7 - Master or equivalent	0.124	0.160	0.062	0.093	0.036**	0.018	−0.063**	−0.067**
Other	0.033	0.033	0.013	0.019	−0.001	0.031**	−0.021**	−0.013
Long-time unemployed (12-months)	0.392	0.405	0.060	0.087	0.013	0.027	−0.332**	−0.318**

Notes: Characteristics are measured at the beginning of the start-up, based on administrative records. Numbers are shares unless otherwise stated.

[a] The ** indicate significant differences of means in the variables between men and women being no beneficiary or receiving social benefit / unemployment benefit II (SGBII) (d_1), men and women receiving unemployment benefit (SGBIII) (d_2), men in both unemployment groups (d_3) as well as women in both unemployment groups (d_4).

Source: Authors' own illustrations, based on administrative data from the GFAW.

The educational differences indicate the importance of the underlying selection processes into self-employment. At first, Caliendo et al. (2012)[20] and Caliendo et al. (2015) show in their studies that 46.5% and 47.8% of the participants of GZ had a qualification similar to the ISCED-3 degree. This is significantly higher than the UB (SGBIII) owners in EXI. As the EXI-owners are former receivers of UB (SGBIII) who were denied GZ benefits, the administrative selection process by the unemployment agency could already have identified the most promising entrepreneurs (cherry picking) among the unemployed, possibly the ones with a higher educational degree. Or these unemployed persons have been rejected because they had higher chances of finding a dependent employment. This would be in line with the placement priority idea, that is, the FEA should only use and permit ALMP if a direct reintegration into dependent employment is unlikely (Bernhard and Grüttner, 2015). As there is a lack of literature about the operation and appropriateness of administrative selection processes, this would be an interesting point of further research.[21]

However, this does not explain the on average higher educational level of EXI-owners compared to all unemployed persons. Quite the reverse would be expected, as Sluis et al. (2008) show in meta-analyses, that, in Europe, returns to education are slightly lower for entrepreneurs than for employees. Due to this result, it could be expected that those unemployed persons with a high level of education are more likely to self-select into employment than self-employment. They may also be more likely to find dependent employment, since most firms rank the unemployed, as they prefer c.p. jobless with a higher level of formal

[20] PLease note, Caliendo et al. (2012) use data from businesses started in the first quarter of 2009, which is three years before the EXI start-up support was opened to unemployed receiving UB (SGBIII).

[21] Most recently, Bellmann et al. (2017) address this topic in a working paper.

(job) education (Deming et al., 2016) and a lower duration of immediate unemployment (Blanchard and Diamond, 1994; Eriksson and Rooth, 2014). A promising approach to shed some light on this issue would be a comparison with other formerly unemployed persons entering dependent employment and comparing their respective educational levels. Even if the selection process remains somewhat inconclusive, the high educational level compared to all unemployed persons is from a policy perspective promising since a higher endowment of human capital is associated with a better firm performance (Gimeno et al., 1997; Rauch and Rijsdijk, 2013).

In the case of job education, it holds true that there are different levels of education among the unemployed of NB / UB (SGBII) compared to the UB (SGBIII). All differences of education levels of men (d_3) and most of the differences of women (d_4) are significant. However, there is a changing picture about the average educational level: The group of NB / UB (SGBII) significantly more often achieves the highest ISCED-6 (Bachelor or equivalent) or ISCED-7 (Master or equivalent) degrees (men 23.2% and women 26.2%) compared to those men and women receiving unemployment benefits (SGBIII) (13.6% vs. 18.8%). However, they are also more often represented in the lowest educated groups having no apprenticeship, i.e. an ISCED-3 degree or other (men 14.8% and women 12.6% compared to men 5.9% and women 7.5%). So while the first group more often achieves a qualification at the margins of the educational distribution, the owners formerly receiving UB (SGBIII) have significantly more often mid-level qualification degrees of ISCED-4 (Post-Secondary Non-Tertiary) and ISCED-5 (Short-Cycle Tertiary) (men 80.5% and women 73.6% compared to 62.0% and 61.3%).[22] Due

[22] Looking at the group of all unemployed persons, those receiving UB (SGBIII) are, in terms of job-qualification, significantly better educated than the UB (SGBIII) group (see Table 2.A2).

to the German training system with its dual-system tracks of vocational education as well universities, these results are consistent with the school education levels presented before.

As nothing is known about the motives that drives the start-up process, the heterogeneity among unemployed of NB / UB (SGBII) cannot be fully elaborated yet. For example Bergmann and Sternberg (2007) show for the German labor market between the years 2001 and 2004, that start-ups out of necessity are launched by persons with a wide variety of educational backgrounds. For those start-ups, educational levels have no significant impact on the start-up decision, while it is however important for opportunity-driven start-ups.[23] However, the results from EXI significantly differ from the overall population of the respective groups (Table 2.A2), since they have significantly more often a university degree and are significantly less often suffering from a lack of formal vocational qualification. According to the KFW-Gründungsmonitor, 17% of the business owners in Germany have no apprenticeship, while 55% have a mid-level job-qualification and 28% receive an ISCED-6 or ISCED-7 degree.

Overall, the EXI owners compared with all business owners have a medium level education, with an underrepresentation at the margins. Compared to all unemployed persons, EXI-owners have a better education. In Table 2.A2 it is further shown, that among the lower qualified owners a remarkable share are migrants, which indicates that for those – next to labor market discrimination – another entry barrier into wage-employment exists. Again, the start-up subsidy may act as a non-discriminatory incentive for this group. However, Kogan (2011) shows that the educational gap for recent immigrants in Germany is

[23] In contrast to this, Block and Wagner (2010) find, that both groups (necessity and opportunity driven start-ups) have the same level of education.

much smaller than for previous cohorts. In some circumstances the educational degrees are even higher than those received by the native-born.

When looking at the labor market history of the business owners in Table 2.3, it is obvious that the NB / UB (SGBII) group is more often suffering from long-term unemployment (about 40% of business owners independent of sex) than the counterpart of the UB (SGBIII) receivers (6.0% of male and 8.7% of female business owners). Consistent with this finding, unemployed persons are only eligible for a period of twelve months for the UB (SGBIII)[24], which is coincident with the definition of long-term unemployment. Typically, the longer the current unemployment period, the less likely it is to find wage-employment. Not only can an ongoing stint of unemployment depreciate human capital (Blanchard and Summers, 1986; Hinz and Jungbauer-Gans, 1999), but also potential employers put particular emphasis on the long-term unemployment status (Eriksson and Rooth, 2014).

On the contrary, unemployment duration also has a financial dimension, since benefit entitlements are partially limited. Thus, the question arises, how a remaining entitlement influences the start-up decision. For example, Caliendo and Kritikos (2010) find for the start-up subsidy and bridging-allowance, that a remarkably low share of unemployed persons starting a business have a remaining entitlement of lower than one month. Even if no data for the EXI about a remaining entitlement and the exact duration of the unemployment exists, the majority of unemployed persons likely starts their businesses when approaching

[24] For unemployed above the age of 55 years, the eligibility period is extended up to two years.

the end of the twelve months of the UB (SGBIII).[25] This is reasonable because, first there is a regulation that the unemployed persons shift after twelve months to the NB / UB (SGBII) group. To prevent this, becoming self-employed (with a fixed amount of monthly support payments by the EXI) is an advisable alternative in comparison to no or less state payments (cf. Bergmann and Sternberg, 2007). Second, the unemployment benefits as well as the GZ-support are typically linked to higher payments than the EXI. From a profit maximizing aspect, it would not be reasonable to forgo these safe payments.

2.3.3 Types of businesses started

In Table 2.4, we highlight the different sectors in which the four groups are engaged.[26] Arguments put forward by Johnson (2004) and Shane (2009) state that start-ups by the unemployed are mainly created in industries of high competition, comparatively low entry barriers and with high risk of failures, where start-ups would not be most promising.

In the EXI-dataset most businesses started by men are in the industries of business activities, transport and logistics (23.8% NB / UB (SGBII) and 26.3% UB (SGBIII)), construction (10.1% and 28.1%) and retail (21.8% and 14.5%). For women other unspecified services (34.2% NB / UB (SGBII) and 30.1% UB (SGBIII)) are the predominant sector, which is mostly represented by hairdressing and beauty.

[25] Interestingly, Caliendo et al. (2012) find, that this does only holds partially true in the case of GZ. Businesses are started significantly earlier in the unemployment period, than it was found in the case of the start-up subsidy and the bridging-allowance.

[26] It was only possible to opt for one business at the beginning of the start-up, so diversified businesses which are active in more than one sector are not captured. However, in previous analyses (Pfeiffer and Reize, 2000) it was shown that the majority ($> 95\%$) of supported businesses are non-diversified, so that no significant changes of the statics may result from that issue.

Again, retail (17.9% and 14.9%) and business activities, transport and logistics (17.8% and 16.7%) are further important industries. Personal social services, health activities, education (12.5% and 17.1%) as well as hotels and restaurants (10.1% and 8.4%) finish the enumeration for women.

Consistent with the existing literature (Bates, 1995; Du Rietz and Henrekson, 2000; Caliendo and Kritikos, 2010; Koellinger et al., 2013) there is a significant difference in the type of business activity between men and women. Existing role models (Welter and Smallbone, 2010; Welter et al., 2014) as well as the relevance of the fields of study (Leoni and Falk, 2010), prior working experience and the related accumulation of industry specific human capital (Kim et al., 2006) tend to be the main determinants of the chosen sectors. For the case of EXI, differences between NB / UB (SGBII) and UB (SGBIII) are of less relevance, with the exception of the significant difference of men (18.0%) in the construction industry (see Table 2.4). As this industry typically is not characterized by the need for a high level of formal education (Grown and Bates, 1992; Bates, 1995; Kim et al., 2006) this could be a further hint for the mid-level qualification of the owners of UB (SGBIII) compared to NB / UB (SGBII), which has been presented before.

The chosen industry is of high relevance for the future success of the business. Comparing the chosen industries of the EXI-owners with sector survival rates as presented by Fritsch et al. (2006), the critical arguments mentioned earlier are not contradicted. Most of the favored industries by EXI-owners, however, show a survival probability which is below average (construction 57.3%, hotels and restaurants 53.1%) or average (wholesale and retail trade (64.2% and 63.9%), other private services 68.5%, traffic and freight 62.3%) compared to all private industries (64.1%) after two years. The sectors do not significantly change

in the five-year and ten-year survival perspective. A positive exception is the health care sector with a two-year survival rate of 85.1%. Only a small minority of the EXI-owners is engaged in manufacturing, where survivability is generally higher than in services.

The EXI-data neither provides information about the necessary start-up capital for the venture, nor about the share of the capital brought in by the owner. However, the start-up support after the period of eligibility may provide some useful insights into the general distribution of the necessary money. Aside from the owner's living costs, all costs of the business were eligible. A start-up subsidy lower than 7,200 EUR indicates lower costs of the business during the first year. However, a value of 7,200 EUR does not show how much higher the actual capital requirement in the first year was, as it represents an upper limit on the financial resources. At first glance the average subsidy ranges from 6,751 EUR (men of NB / UB (SGBII)) to 6,977 EUR (men of UB (SGBIII)). The difference of 225 EUR is highly significant. Also women of UB (SGBIII) received slightly, but still significantly, higher subsidies than their NB / UB (SGBII) counterpart. The large majority of the owners (around 80%) had higher costs than 7,200 EUR in their first year, while less than 5% did not even need 3,600 EUR. Men and women show no significant differences in capital requirement, which in the context of reported differences in the selected industries is remarkable and is not reflected by the literature (Caliendo and Kritikos, 2010). One hint may be the fact, that the state cuts off the distribution at the 7,200 EUR margin. Those businesses which were typicality more capital intensive and started by men (e.g. construction, retail of machinery and cars) may thus be of less importance as their higher capital requirements are not adequately reflected in the data.

Table 2.4: Industry and start-up capital of businesses

	No beneficiary / Social benefit / Unemployment benefit II (SGBII)		Unemployment benefit (SGBIII)		Differences of means[a]			
	Men (I)	Women (II)	Men (III)	Women (IV)	d_1 (I vs. II)	d_2 (III vs. IV)	d_3 (I vs. III)	d_4 (II vs. IV)
Industry of start-up								
Agriculture, hunting, forestry, fishery, environment	0.009	0.002	0.008	0.002	−0.007**	−0.005	−0.001	0.000
Business activities, transport, logistics	0.238	0.178	0.263	0.167	−0.060**	−0.096**	0.025	−0.011
Construction	0.101	0.005	0.281	0.015	−0.096**	−0.265**	0.180**	0.010
Financial intermediation	0.045	0.031	0.040	0.065	−0.014**	0.025	−0.005	0.034**
Hotels and restaurants	0.086	0.101	0.050	0.084	0.015	0.034**	−0.036**	−0.016
Manufacturing	0.043	0.033	0.064	0.037	−0.010	−0.027**	0.021**	0.004
Mining, energy and water supply	0.003	0.001	0.003	0.000	−0.002	−0.003	−0.000	−0.001
Other unspecified services	0.211	0.342	0.103	0.301	0.132**	0.198**	−0.107**	−0.041
Personal social services, health activities, education	0.031	0.125	0.029	0.171	0.095**	0.142**	−0.002	0.046**
Post, information technology, telecommunications	0.016	0.003	0.015	0.009	−0.013**	−0.006	−0.001	0.005
Retail	0.218	0.179	0.145	0.149	−0.039**	0.005	−0.074**	−0.030
Start-up support (in Euro)	6,751.00	6,767.00	6,977.00	6,890.00	16.00	-87.00	225.00**	123.00**
Up to 3,600.00 Euro	0.046	0.041	0.023	0.030	−0.005	0.007	−0.022**	−0.011
3,600.01 EUR - 7,199.99 EUR	0.180	0.195	0.101	0.130	0.015	0.030	−0.079**	−0.064**
7,200 EUR	0.775	0.765	0.876	0.840	−0.010	−0.036	0.101**	0.075**

Notes: Industries are measured at the beginning of the start-up, the start-up support after the period of eligibility (typically twelve months) based on administrative records. Numbers are shares unless otherwise stated.
[a] The ** indicate significant differences of means in the variables between men and women being no beneficiary or receiving social benefit / unemployment benefit II (SGBII) (d_1), men and women receiving unemployment benefit (SGBIII) (d_2), men in both unemployment groups (d_3) as well as women in both unemployment groups (d_4).
Source: Authors' own illustrations, based on administrative data from the GFAW.

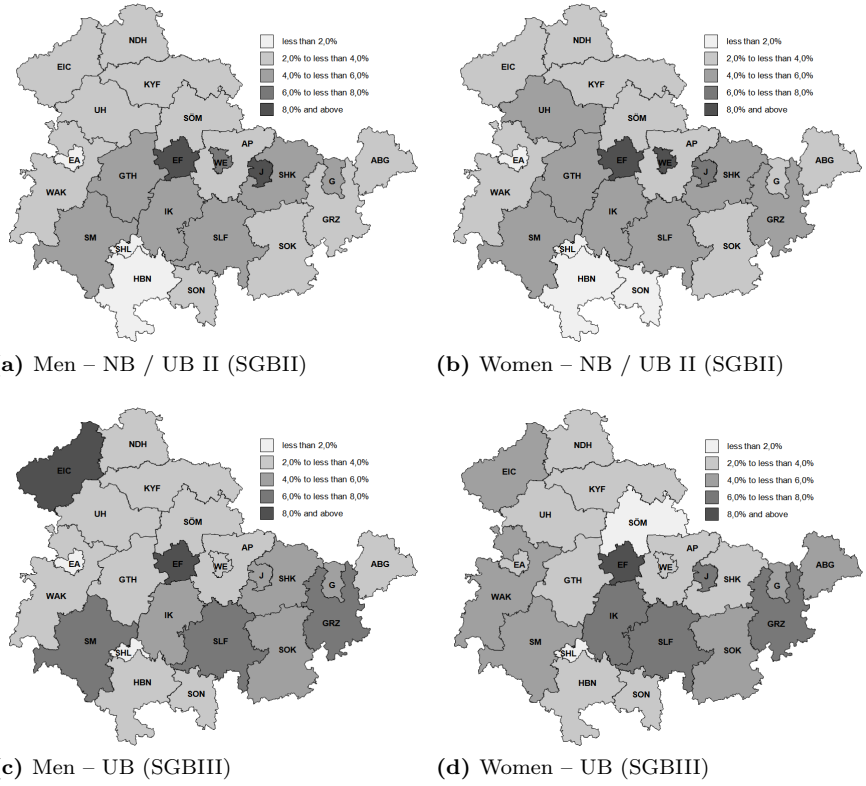
2.3.4 Localization of business start-ups

Another important issue is the regional distribution of businesses founded. The data is reported on the level of official municipality codes (Gebietskennzahlen), which is a unique identifier for every politically independent municipality or unincorporated area in Germany. In this paper, for analysis purposes, the data has been aggregated. To get a first glance, in Figure 2.2, we present shares of subsidized start-ups on all supported businesses of EXI at the NUTS-3 level (EUROSTAT, 2011b). Thuringia is divided into 23 administrative districts (Kreise and Kreisfreie Städte). We can recognize, that Figures 2.2a and 2.2b of Thuringia for men and women of NB / UB (SGBII) closely resemble each other. The highest shares of start-ups can be found in the urban districts of EF (Erfurt), WE (Weimar) and J (Jena), while more rural districts in the northern and southern part of the federal state show a lower share of supported firms.

Compared to the men and women of UB (SGBIII), illustrated in Figures 2.2c and 2.2d, there are significant differences. Rural districts in the middle and south (as well as again the capital of the federal state EF) show an above-average business formation rate. However, the aggregation on a district level is to some extent generalized as in more rural districts also larger agglomerations exist. A more detailed view is, thus, also presented: Looking at Table 2.5, it is obvious that indeed significant differences in the degree of urbanization between the four groups prevail.[27] While only 26.4% of NB / UB (SGBII) men started up in rural areas, 40.2% did so in cities. For men of UB (SGBIII) the reverse is true, as 44.4% (23.0%) founded their business in sparsely

[27] The degree of urbanization is measured by the Eurostat "Degree of Urbanisation" (DEGURBA) classification for LAU2 (Local Administrative Units) areas, which correspond to the municipal level (EUROSTAT, 2011a).

(densely) populated regions. The same holds true for women, even if a more equal distribution can be found in the data. Thus, the formerly unemployed of UB (SGBIII) are significantly more likely to found their businesses in rural areas than in cities. To some extent, this can be attributed again to the share of migrants of the owners of NB / UB (SGBII).



(a) Men – NB / UB II (SGBII)

(b) Women – NB / UB II (SGBII)

(c) Men – UB (SGBIII)

(d) Women – UB (SGBIII)

Figure 2.2: Regional distribution of subsidized businesses

Notes: In Figure 2.2, the shares of subsidized businesses on all businesses per class (men (top left) and women (top right) of NB / UB (SGBII) and men (bottom left) and women (bottom right) of UB (SGBIII)) in the 23 districts of Thuringia are illustrated.

Source: Statistics of the GFAW; authors' own calculations and illustrations.

As can be seen in Table 2.A2 migrants predominantly favored founding businesses in cities. Nevertheless, also for non-migrant owners the trends exists in a moderate form. This may be due to a correlation of the chosen industry and the localization of business. While for example the construction sector is predominantly found in sparsely populated areas by UB (SGBIII) (23.1% to 7.9% in densely populated areas), other businesses, especially retail, are of more importance for the NB / UB (SGBII) and more often founded in cities (31.1%) than in rural areas (24.2%) by this subgroup.

However, causality remains uncertain, as personal preferences or a lack of dependent employment opportunities can drive the localization choice. Likewise, opportunities in a given area can also drive the industry choice. On this topic, Dahl and Sorenson (2009, 2012) state that the former plays a major role, as entrepreneurs prefer proximity to family and friends, while regional characteristics and venture opportunities are of less importance for start-up decisions. Interestingly, in all groups of the EXI-dataset, approximately one third of the owners started their business in intermediate density areas (towns and suburbs), independent of gender, migration status or unemployment group.

Table 2.5: Business placement

	No beneficiary / Social benefit / Unemployment benefit II (SGBII)		Unemployment benefit (SGBIII)		Differences of means[a]			
	Men (I)	Women (II)	Men (III)	Women (IV)	d_1 (I vs. II)	d_2 (III vs. IV)	d_3 (I vs. III)	d_4 (II vs. IV)
Area of Business Domicile								
Cities (densely populated areas)	0.402	0.354	0.230	0.266	−0.048**	0.036	−0.172**	−0.088**
Towns and suburbs (intermediate density areas)	0.334	0.354	0.326	0.352	0.020	0.026	−0.008	−0.002
Rural areas (thinly populated areas)	0.264	0.292	0.444	0.382	0.028**	−0.062**	0.180**	0.091**

Notes: Characteristics are measured at the beginning of the start-up, based on administrative records. Numbers are shares unless otherwise stated.

[a] The ** indicate significant differences of means in the variables between men and women being no beneficiary or receiving social benefit / unemployment benefit II (SGBII) (d_1), men and women receiving unemployment benefit (SGBIII) (d_2), men in both unemployment groups (d_3) as well as women in both unemployment groups (d_4).

Source: Authors' own illustrations, based on administrative data from the GFAW.

2.3.5 Outcomes

2.3.5.1 Business survival

Looking at business survival rates, the descriptive statistics are quite puzzling. The regional administration of Thuringia reported two different measures, which should be interpreted as a lower and upper bound of the business survival rate as no direct monitoring of business performance after the funding period has been done.

The upper bound is the rate of discontinued operations during the funding period. These businesses exited the market during the first twelve months after their foundation, as the reported eligible period was less than the maximum of twelve months. This is, however, rarely happening, as above 95% of the owners of NB / UB (SGBII) and UB (SGBIII) still continued their business after the first year. But likely the beneficiaries want to receive the money until the end of the maximum funding period. It may be an expression of missing alternatives or a profit-maximizing behavior in the course of the support. No significant difference between the unemployment groups can be found. Likewise, no significant gender-gap exists.

The lower bound refers to the administration process. Next to start-ups not having completed the full twelve months, also completely revoked subsidies may be counted as business exits. These are founded businesses whose application for the subsidy has been approved in the first instance, but the grant has been reclaimed in the meantime. Neither a reason of the repayment claim is reported, nor at which time the cause of cancellation occurred. Typically, this is due to insolvency, as preconditions for disbursement are not fulfilled. But also violating other covenants during the eligible period may be a reason (e.g. start-up is only a sideline business). Again, about 90% of the subsidized businesses

survived in this sense, while men of NB / UB (SGBII) are significantly more often affected by these problems.

Comparing the results with those reported by OECD and European Commission (2014), Caliendo (2016) and Chapter 4 of this thesis, and also taking into account the funding period, which is still ongoing, in international comparison EXI ranks in the top range of the one-year survival rates after start-up. Due to the missing post-evaluation, results about survivability are very limited in their validity. For sure, a more appropriate approach would measure the survival rate after the subsidy faded out. One can expect that it is harder to stay in the market at the end of the payment period and the years after that. Longer-term analysis would therefore be preferable.[28]

2.3.5.2 Indirect employment effects

Nightingale and Coad (2013) state that the transition from an unemployed person to an employer may be the best case from the policy maker's perspective, but it is just as rarely the case. Being aware that the given categories are limited in their meaningfulness, the overwhelming majority ($> 98\%$) of the started businesses has less than five employees.[29] Almost no business was found with more than 20 employees. The only two exceptions were businesses in the retail industry. In sum, it can also be derived from the data that at least four additional jobs were created per 100 subsidized participants at the time of start-up. Additionally, we found in the case of UB (SGBIII) men (1.7%) a group of significant employment creation, which is mainly driven by

[28] Due to reasons of data protection, a post-evaluation and a survey of a comparison group was not possible. Further, the intended post-evaluation of the federal state of Thuringia has not been conducted.

[29] Also the owners of the business count as employees, that is, it can not be said, how many businesses really had employees when starting up.

the owners of the construction, retail and manufacturing sectors. This concentration on a few sectors is not too surprising, since the above mentioned are more labor intensive. However, it remains to further research to find long-term indirect employment effects. In general, the literature shows that unemployed individuals converting to self-employed are predominantly solo-entrepreneurs (Caliendo et al., 2012) and keep their prospects in a medium-term perspective (Caliendo and Kritikos, 2010; Fritsch et al., 2012; Poschke, 2013).

Table 2.6: Outcomes

	No beneficiary / Social benefit / Unemployment benefit II (SGBII)		Unemployment benefit (SGBIII)		Differences of means[a]			
	Men (I)	Women (II)	Men (III)	Women (IV)	d_1 (I vs. II)	d_2 (III vs. IV)	d_3 (I vs. III)	d_4 (II vs. IV)
Business Survival								
Discontinued operations (during funding period)	0.038	0.029	0.029	0.050	−0.009	0.021	−0.009	0.021
Cessation of business[b]	0.106	0.079	0.065	0.084	−0.028**	0.018	−0.041**	0.005
Corporation Size								
1-4 employees	0.993	0.995	0.983	0.991	0.002	0.008	−0.009	−0.004
5 - 19 employees	0.007	0.005	0.017	0.009	−0.002	−0.008**	0.010**	−0.001
20- 49 employees	0.000	0.001	0.000	0.000	0.000	0.000	−0.000	−0.001

Notes: Characteristics are measured at the ending of the start-up support funding period or latest administrative action, based on administrative records. Numbers are shares unless otherwise stated.
[a] The ** indicate significant differences of means in the variables between men and women being no beneficiary or receiving social benefit / unemployment benefit II (SGBII) (d_1), men and women receiving unemployment benefit (SGBIII) (d_2), men in both unemployment groups (d_3) as well as women in both unemployment groups (d_4).
[b] The variable also contain projects being completely revoked by the administration, which increases the numbers of observations by 337 (180 men and 109 women of NB / UB (SGBII) and 31 men and 17 women UB (SGBIII)).
Source: Authors' own illustrations, based on administrative data from the GFAW.

2.4 Conclusion

Data about start-up subsidy programs for the unemployed are rather scarce and are particularly needed at the regional level. When evaluating such policies, the business founding aspects as well as the ALMP perspective play an important role. This paper introduces a new dataset that provides valuable information about the characteristics of formerly unemployed owners, their start-ups along with reported outcomes. The full data set contains all 5,636 business owners receiving the EXI start-up subsidy between 2007 and 2014 in the German federal state of Thuringia. With regard to the number of observations, this dataset is, thus, one of the largest datasets analyzed in the existing literature in that research field. Additionally, it covers a regional subsidy that complements the GZ and EG, which in turn generated broad recognition by scholars (Caliendo and Kritikos, 2009; Caliendo et al., 2012, 2015; Wolff and Nivorozhkin, 2012; Wolff et al., 2016) and international organizations (OECD and European Commission, 2014). Since the introduction of the Hartz-reforms, EXI is the first start-up subsidy program targeted towards all unemployed groups in a specific region of Germany. Former studies only covered selective unemployment groups due to program eligibility criteria and were performed on the federal level.

In this paper, we provide detailed descriptive statistics about this dataset. To shed some light on the ALMP and start-up perspective of the EXI as well, the presented descriptive statistics were compared with previous studies on start-up subsidies, with all unemployed in the related region but also with all business owners of Germany for the time EXI was in charge. Three main results were derived from this study, even though they should always be seen and interpreted under the aspect of a regional start-up subsidy program on the federal state

of Thuringia and the corresponding limitations.

First, in some characteristics (gender of the participants or education) the formerly unemployed owners receiving EXI significantly differ from relevant reference groups, while for other characteristics (age-distribution, share of migrant business owners) EXI confirms the results found in the literature so far. Comparing characteristics of the EXI-owners with that of all business founders in Germany or other start-up subsidies like GZ and EG. EXI is particularly attractive for women. Almost half of the businesses were set up by unemployed women, which can be attributed to a generally higher female labor market participation rate in East Germany, but also to the fact, that the EXI support scheme is relatively well suited to generate additional household income and to combine work and family life through self-employment. Further, the general and job specific human capital of the owners is comparatively high compared to all unemployed persons in the federal state of Thuringia. Only a small proportion of the owners has not graduated school or has no apprenticeship, while the share of participants that obtained a general upper secondary or a university degree is surprisingly high compared to all unemployed persons. This is to be assessed positively with regard to the company's future probabilities of success. However, compared to all business owners in Germany or unemployed receiving GZ, the EXI-receivers are on average less formally educated, which points to interrelations with the selection process as the better educated persons could already be in other support measures.

Second, confirming arguments put forward by Johnson (2004), Shane (2009) and Niefert (2010) start-ups founded by the unemployed are mainly created in less promising industries, characterized by comparatively low entry barriers, high competition and high failure rates. The overwhelming majority of the EXI owners started their business in the

sectors of retail, construction, hotel and restaurants as well as other services (most common is hairdressing and beauty) – all of which are the sectors with the highest failure rates.

Third, only a minority of start-ups creates indirect employment effects at the time of start-up (four additional jobs per 100 participants), while the direct employment effect of the owners is comparatively high. The one-year survivability of the firms is above 90%. However, as this corresponds to the funding period, nothing is known about the medium-term perspective of the business performance when support is no longer available. Typically, this leads to a strong increase in exit-rates.

Only little is known about interdependencies of policy design, the entry decision and future business success with particular reference to regional circumstances. In this paper it has been shown, that the lack of a consistent scientific monitoring of ALMP and start-ups as well hindrances to scholars in their research, preventing appropriate advice for policy design. To address this problem, we provide an additional source of data to the economic community, to partially fill these existing gaps and create a starting point for further holistic research approaches. However, the paper can unfortunately not fill the existing lack of studies about program effectiveness in the long term.

Appendix to Chapter 2

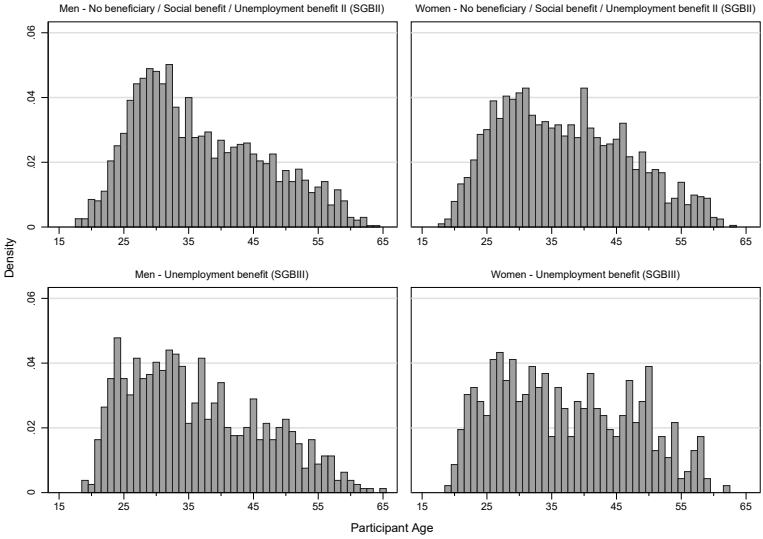


Figure 2.3: Histogram of unemployment rates

Notes: In Figure 2.3, the distribution of participant age of unemployed being no beneficiary or receiving social benefit / unemployment benefit II (SGBII) and receiving unemployment benefit (SGBIII) are illustraded. Separated for men and women.

Source: Statistics of the GFAW; authors' own calculations and illustrations.

Table 2.A1: Socio-demographic background of unemployment in Thuringia

	Social benefit / Unemployment benefit II (SGBII)		Unemployment benefit (SGBIII)		Differences of means[a]			
	Men (I)	Women (II)	Men (III)	Women (IV)	d_1 (I vs. II)	d_2 (III vs. IV)	d_3 (I vs. III)	d_4 (II vs. IV)
Age category								
18 - 24 years	0.068	0.069	0.157	0.100	0.010	0.020**	−0.025	0.022
25 - 34 years	0.259	0.238	0.173	0.148	0.155**	0.127**	0.210**	0.202**
35 - 44 years	0.224	0.233	0.148	0.171	0.048**	0.068**	0.102**	0.082**
45 - 54 years	0.295	0.303	0.230	0.292	−0.121**	−0.113**	−0.046**	−0.065**
55 - 66 years	0.154	0.157	0.292	0.289	−0.092**	−0.102**	−0.241**	−0.241**
Migrant	0.036	0.036	0.014	0.014	0.152**	0.123**	0.050**	0.043**
Disability	0.062	0.045	0.070	0.063	−0.033**	−0.021**	−0.046**	−0.043**
Annual Average 2007 to 2014	38,751	35,903	21,141	21,204				

Notes: Characteristics base on official administrative records. Numbers are shares unless stated otherwise. Reported values are annual averages of the years 2007 to 2014.

[a] The ** indicate significant differences between the annual averages of unemployed (full-data of the years 2007 to 2014) and the respective business owners receiving EXI. Presented results are grouped for men (d_1) and women (d_2) receiving social benefit / unemployment benefit II (SGBII) and men (d_3) and women (d_4) receiving unemployment benefit (SGBIII). Please note, that data is not available for the no-beneficary group.

Source: Authors' own illustrations, based on administrative data by the FEA.

Table 2.A2: Qualification and labor market history of unemployment in Thuringia

	Social benefit / Unemployment benefit II (SGBII)		Unemployment benefit (SGBIII)		Differences of means[a]			
	Men (I)	Women (II)	Men (III)	Women (IV)	d_1 (I vs. II)	d_2 (III vs. IV)	d_3 (I vs. III)	d_4 (II vs. IV)
School Education								
ISCED 1 - Primary / No Graduation	0.125	0.084	0.029	0.015	−0.113**	−0.079**	−0.024**	−0.015**
ISCED 2 - Lower Secondary	0.785	0.827	0.806	0.812	−0.154**	−0.188**	−0.053**	−0.122**
ISCED 3 - Upper Secondary	0.068	0.065	0.154	0.165	0.277**	0.281**	0.081**	0.136**
Other	0.022	0.023	0.012	0.008	−0.010**	−0.015**	−0.004	0.001
Job Education[b]								
No Apprenticeship	0.259	0.237	0.101	0.062	−0.171**	−0.177**	−0.048**	−0.047**
ISCED 3 / 4 / 5 - Upper Secondary to Short-Cycle Tertiary	0.669	0.691	0.808	0.822	−0.023	−0.046**	0.007	−0.045**
ISCED 6 / 7 - Bachelor / Master or equivalent	0.033	0.033	0.101	0.109	0.199**	0.229**	0.035**	0.079**
Other / No Information	0.038	0.040	0.006	0.007	−0.005	−0.007	0.006	0.012

Notes: Characteristics based on official administrative records. Numbers are shares unless otherwise stated. Reported values are annual averages of the years 2007 - 2014.

[a] The ** indicate significant differences between the annual averages of unemployed (full-data of the years 2007 to 2014) and the respective business owners receiving EXI. Presented results are grouped for men (d_1) and women (d_2) receiving social benefit / unemployment benefit II (SGBII) and men (d_3) and women (d_4) receiving unemployment benefit (SGBIII). Please note, that data is not available for the no-beneficiary group.

[b] Annual means of the years 2009 to 2014, due to data availability.

Source: Authors' own illustrations, based on administrative data from the GFAW.

Table 2.A3: Qualification and labor market history of the business owners among non-migrants and migrants

	No beneficiary / Social benefit / Unemployment benefit II (SGBII)		Unemployment benefit (SGBIII)		Differences of means[a]	
	Non-Migrant (I)	Migrant (II)	Non-Migrant (III)	Migrant (IV)	d_1 (I vs. II)	d_2 (III vs. IV)
School Education						
ISCED 1 - Primary / No Graduation	0.005	0.028	0.001	0.039	0.022**	0.038
ISCED 2 - Lower Secondary	0.652	0.552	0.744	0.506	−0.100**	−0.238**
ISCED 3 - Upper Secondary	0.340	0.371	0.253	0.364	0.030	0.111**
Other	0.002	0.050	0.003	0.091	0.048**	0.088**
Job Education						
No Apprenticeship	0.048	0.203	0.019	0.169	0.155**	0.149**
ISCED 3 - Upper Secondary	0.021	0.069	0.019	0.065	0.048**	0.046
ISCED 4 - Post-Secondary Non-Tertiary	0.561	0.283	0.625	0.325	−0.278**	−0.301**
ISCED 5 - Short-Cycle Tertiary	0.113	0.058	0.176	0.117	−0.055**	−0.059
ISCED 6 - Bachelor or equivalent	0.104	0.113	0.081	0.104	0.009	0.023
ISCED 7 - Master or equivalent	0.137	0.160	0.069	0.130	0.023	0.060
Other	0.016	0.114	0.010	0.091	0.098**	0.081**
Area of Business Domicile						
Cities (densely populated areas)	0.338	0.577	0.229	0.461	0.239**	0.231**
Towns and suburbs (intermediate density areas)	0.345	0.336	0.332	0.382	−0.009	0.049
Rural areas (thinly populated areas)	0.317	0.088	0.439	0.158	−0.229**	−0.281**

Notes: Characteristics are measured at the beginning of the start-up, based on administrative records. Numbers are shares unless otherwise stated.

[a] The ** indicate significant differences of means in the variables between men and women being no beneficiary or receiving social benefit / unemployment benefit II (SGBII) (d_1), men and women receiving unemployment benefit (SGBIII) (d_2), men in both unemployment groups (d_3) as well as women in both unemployment groups (d_4).

Source: Authors' own illustrations, based on administrative data by the the GFAW.

Chapter 3

Start-Up Subsidies for the Unemployed – The Effects on Regional Labor Markets

"SUN: Tell me about yourself.
SHEN TEH: What is there? I've got a small shop.
SUN, *ironically*: Oh, so you haven't got a flat, you've got a shop!
SHEN TEH, *firmly*: I've got a shop, but before that I was on the streets.
SUN: And the shop, I take it, was a gift of the gods?
SHEN TEH: Yes.
SUN: One fine evening they stood before you and said: Here's some money for you.
SHEN TEH, *laughing quietly*: One morning."

— Brecht (2016, p. 110f.)

Abstract.[30] Active Labor Market Policies, like the promotion of self-employment among unemployed persons, are broadly discussed instruments to improve the employment situation in Europe. Whether the measures implemented work is, however, uncertain. We contribute to already completed participant evaluations by conducting a macroeconomic approach, investigating a unique data set of participants of two distinctive start-up subsidies in Thuringia, a federal state of Germany. When implementing a stock-flow matching function, we find only limited evidence that start-up subsidies help to reduce unemployment at the regional level. We demonstrate that direct employment effects largely depend on the supported target groups and their prior endow-

[30] I am grateful to Prof. Dr. Heike Grimm, Dr. Johannes Jaenicke, Dr. Tina Haussen and Lee Drewitz as well as the participants of the 2016 International Council for Small Businesess (ICSB) World Conference, New York/ New Jersey, and the 2017 RENT Conference, Lund (i.e. Prof. Dr. Hiroyuki Okamuro and two anonymous referees) for many helpful discussions and suggestions. The presentation of the paper in Lund, Sweden has been financially supported by the Deutsche Akademische Austauschdienst (DAAD).

ment of human and financial capital. In particular for the long-term unemployed with a lower endowment of human and financial capital these results give new indications about counteracting market distortion. Conclusions for reasonable policy implications are discussed.[31]

3.1 Introduction

As a result of the financial and economic crisis, Europe's labor markets are still in a tense situation. The unemployment rate within the European Union (EU) has increased from 7.2% in 2007 to its high of 10.9% in 2013 but has begun slowly recovering since then (International Labour Organization, 2011, 2015, 2017). Appropriate policies may help to improve the employment situation. For this purpose, policymakers identified active labor market policies (ALMP) as a possible instrument of recourse and implemented them in several countries (Kluve, 2010; Card et al., 2015). Between 2007 and 2013, public expenditures on ALMP relative to GDP increased by a third, from 1.43% to 1.90%, in the EU. One of these ALMP, the promotion of self-employment among the unemployed, became one of the most broadly discussed measures (OECD and European Commission, 2014; Eurofound, 2016). While evaluation studies identify positive employment effects for the supported participants and show high survival rates (e.g. Andersson and Wadensjö, 2007; Caliendo and Kritikos, 2010; Wolff et al., 2016; Caliendo, 2016; Dvouletỳ and Lukeš, 2016), as of yet there is no evidence whether they further help to reduce unemployment in a region.

The aim of this paper is to evaluate the specifications of ALMP through

[31] JEL-Classification: J64; P48; J08; M13; L53; O11. Keywords: Regional Policy; Start-Up Subsidy; Unemployment; Entrepreneurship

start-up subsidies for the unemployed with respect to its employment effects at the regional level. Existing empirical studies have to be complemented by macroeconomic approaches as ALMP measures not only cause direct positive effects for the individuals involved, but may also create externalities on non-participants (Calmfors, 1995; Calmfors and Skedinger, 1995; Fehr et al., 2002; Abbring and Heckman, 2007; Brown and Koettl, 2015). On the one hand, starting up a business ends unemployment for individuals, directly reducing the regional unemployment rates. Further, younger firms contribute to job creation and growth more than well-established companies (Hart and Oulton, 1999; Lawless, 2014) and the formation of new and growing firms by formerly unemployed persons may lead to more people getting hired, having an indirect effect on the regional unemployment situation. On the other hand, subsidization of self-employment can cause market distortions. New businesses supported by ALMP programs can crowd-out other established companies as well as their employees due to cost advantages created by the rewarded grants. Moreover, given that some of the unemployed would have established a business without start-up subsidies, dead-weight effects of the programs may emerge. As the public covers the rising expenditures for the programs, it is of great public interest to evaluate whether the implemented measures are effective with respect to their net employment effects.

Compared across nations, start-up subsidies traditionally represent a minor role in the wider range of ALMP measures (Martin and Grubb, 2001). Germany, however, is unique in this respect. Labor market reforms and the initiation of federal start-up support programs led to a remarkable increase in business formation rates from unemployed persons in the last decade (Bergmann and Sternberg, 2007; Caliendo and Kritikos, 2010; Bellmann et al., 2017). While in 2001 only 46,000 participants received start-up incentives, the number of beneficiaries had

more than tripled by the year 2010. Due to a policy shift, public expenditures for these kinds of ALMP programs were cut at the federal level and a sharp and intensifying decline has marked start-up rates since December 2011. The government supported only 28,000 participants in 2013. Additionally, not just the federal government offered start-up support in Germany. Regional start-up subsidy programs also complemented the federal policies in some areas. The region of observation, Thuringia – a federal state located in Eastern Germany with a population of 2.2 million people and until 2014 an EU-convergence region[32] – was characterized by an exceptionally high share of participants in these programs.[33] During the years from 2007 to 2014 (the observation period of this paper), unemployment rates decreased substantially from 13.1% to 7.8%.

This paper contributes to the literature in the following ways. Direct and indirect employment effects by start-up subsidies are analyzed in the region of Thuringia. The existing variation among the region, as start-up subsidies for the unemployed were used in a large scale and followed by a deep cut and the unemployment rate strongly declined, will help to reflect on the results in different economic situations. To learn more about the interdependencies of ALMP measures in kind of start-

[32] A region is defined as an EU-convergence region if the gross domestic product (GDP) per capita is less than 75% of the average GDP of the EU-25. Since 2014, Thuringia is a transition region with a GDP per capita of between 75% and 90% of the EU average.

[33] The median and average of the regional participant stock as a percentage of the labor force was 0.44% between 2007 and 2011 in Thuringia. Compared with the OECD average of 0.23% (median 0.065%) in the same period, this is a remarkably high value. In the years 2012 and 2013 the average of about 0.23% (median 0.23%, too) in Thuringia hardly differed from the OECD average of 0.19% (median unchanged). Furthermore, Germany spent more (0.057%) than OECD average (0.016%) of its public expenditures on ALMP for start-up support relative to the GDP between 2007 and 2013. This is the third-highest value after Spain (0.105%) and Poland (0.062%) in the OECD.

up subsidies and regional unemployment, the underlying matching proceedings on the labor market are estimated by a stock-flow approach (Coles and Smith, 1998; Pissarides, 2000). We test whether and how support of business formation out of unemployment contributes to the reduction of unemployment. For this purpose, full data about the jobless figures and the vacant positions in Thuringia is used on a monthly basis. The number of supported participants is obtained from unique data sets from the federal employment agency and regional administrations, that is, comprehensive information about the implemented start-up programs exist. Further, as promotional conditions are also known and different eligible groups subsist, this is used to discuss the importance of participant's human and financial capital endowment when starting up. To deal with causality issues, the before-mentioned policy shift in December 2011 is utilized. Before the shift, federal and regional start up-support was mutually exclusive and targeted to different eligible groups of unemployed. Since then, this separation has been reduced and the instruments are more interrelated.

This paper is structured as follows: A general literature review of entry and success determinants of formerly unemployed entrepreneurs and description of other influencing factors of the shift from unemployment to self-employment is given in Section 3.2. The paper continues with a literature review of evaluation studies about start-up support and active labor market policies (Section 3.3). In Section 3.4, a theoretical framework for the impacts of ALMP start-up programs on labor markets and the regression design is developed. This results in the implementation of a stock-flow matching function environment. The used data set and some descriptive statistics can also be found in this Section. The empirical results are presented in Section 3.5. The paper concludes with Section 3.6 and a statement about relevant policy implications.

3.2 Determinants of self-employment out of unemployment

To better understand the macroeconomic interdependencies of start-up support and unemployment, it is crucial to consider the general context of self-employment and its factors of success. Following the labor market approach, people have to choose between three relevant opportunities: unemployment, dependent employment and self-employment (Knight, 1921; Oxenfeldt, 1943). A decision for self-employment is realized if the expected utility from being self-employed (as a function of pecuniary and non-pecuniary benefits) exceeds utility from dependent employment or unemployment (Blanchflower and Oswald, 1998; Hamilton, 2000; Reize, 2012). Based on this, a considerable part of the entrepreneurship literature analyzes the determinants of starting-up businesses, the characteristics of business owners and aspects of entrepreneurs' success. Or, in a nutshell: determinants of the market entry, performance and exit decision, respectively.

3.2.1 Personal determinants of formerly unemployed business owners

Personal characteristics affect the probability of becoming self-employed as they influence the expected returns of starting up.[34] In the case of business formation by formerly unemployed persons, one has to take into account the advantageousness of a higher endowment of financial

[34] In the literature, other general findings exist, which will not be pursued any further due to data limitations. Next to the importance of the endowment of financial and human capital (see Section 3.2.1.1 and Section 3.2.1.2), men are more likely to become self-employed than women (e.g. Cowling and Taylor, 2001; Berglann et al., 2011; Koellinger et al., 2013; Caliendo and Künn, 2015) and younger and older people are more unlikely to start a business than medium aged people (e.g. Bates, 1995; Simoes et al., 2016.

and human capital.

3.2.1.1 Endowment of financial capital

Capital and liquidity constraints especially are a general hindrance for entrepreneurship and market entry (Evans and Leighton, 1989; Evans and Jovanovic, 1989; Blanchflower and Oswald, 1998; Johansson, 2000; Berge et al., 2014). Capital investments work as an entrance barrier to industries (Lofstrom et al., 2014). Further, the endowment of financial capital determines the level of competition in that market and a firm's later survivability and development (Johnson, 2004; Fritsch et al., 2006).

An insufficient capital endowment of potential business owners may result in a sub-optimally low level of market-entering firms and, thus, market failure. Unemployed persons intending to found a company could be particularly affected. At first, a common argument points towards imperfections in the credit market, which may tend to discriminate against socio-economic groups in general and the unemployed in particular (Meager, 1996, for a broader discussion on this topic see also Section 4.4.1.2). But next to access to the credit markets, the special livelihood of the unemployed also plays a role here. In that special case, individuals typically depend on unemployment benefits, savings or intra-household payments to cover their costs of living. But starting-up requires additional investments in various equipment and business owners have to make a living in spite of expected initial losses. If not available, a substantial financial endowment to start a business is hard to acquire, in particular against the backdrop of a continued stint of unemployment. For this reason, policy measures that deal with the market failure of credit constraints and inadequate provision of capital can help support the unemployed persons in their start-up project

(Craig et al., 2007; Berge et al., 2014).

3.2.1.2 Endowment of human capital

A further issue in this context of market entry is the endowment of human capital. Acquired education and skills in the form of human capital foster the foundation of new businesses (Robinson and Sexton, 1994; Wagner, 2003; Wagner, 2006).

Following Lazear (2004), business owners should be distinguished from paid employees in terms of the necessary human capital. Particularly a jacks-of-all-trade type endowment is favorable for becoming self-employed, as running a business needs a variety of skills and diverse roles have to be fulfilled. That is, entrepreneurs require more general knowledge than formal and specific education to start a successful business. In turn, employees should be specialists in their tasks to gain comparative cost advantages for their employer. Where general knowledge is needed, human and financial capital are substitutable to some extent and simultaneously supportive (Chandler and Hanks, 1998; Parker and Van Praag, 2006). Substitutability is important as entrepreneurs with a high level of human capital may equalize their lack of financial endowment through better investment decisions, and business owners with a lower level of human capital can compensate this through higher financial ventures. However, if both are available to a considerable extent, firms generally perform better (Brüderl et al., 1992; Berge et al., 2014).

As a firm's success is positively influenced by skills and knowledge of the owner (Gimeno et al., 1997; Rauch and Rijsdijk, 2013), this in turn may interrelate with the status of unemployment. As these individuals generally experience a comparatively lower endowment of

human capital (Van Stel and Storey, 2004), a higher risk of failure and lower performance may result (Baptista et al., 2014). Besides, both general and specific human capital tend to depreciate with an increasing duration of unemployment (Blanchard and Summers, 1986; Hinz and Jungbauer-Gans, 1999; Weber, 2014; Card et al., 2015). The longer the period of unemployment the less, c.p., the endowment of needed human capital, which is why a focus on the duration of unemployment can matter.

3.2.2 Contextual factors of starting-up

Moreover, the formation of businesses out of unemployment results from contextual factors. Wagner and Sternberg (2004) and Fritsch and Wyrwich (2014), among others, point to the relevance of a spatial context of business formations. As general feedback processes and long-term path dependencies exist in a regional perspective, further important circumstances of start-ups exist that are not influenced by individual characteristics of the business owners.

3.2.2.1 Relationship between unemployment and self-employment

The relationship between (regional) self-employment formation and economic conditions is not clear; in particular the interrelationship with unemployment-rates. In the literature, different lines of arguments exist and findings support the existence of two effects which relate to unemployment-rates and the formation of businesses (e.g. Gilad and Levine, 1986; Hamilton, 1989; Reynolds et al., 1994; Thurik et al., 2008; Parker, 2009; Congregado et al., 2012a,b).

The first, the so-called *Prosperity-Pull* Hypothesis assumes that indi-

viduals tend to start a business, when economic conditions are favorable and unemployment-rates are low. In this context entrepreneurship is to be assumed as pro-cyclical. Not only profit opportunities are strong due to a higher demand when incomes and wealth are growing (Dawson et al., 2009), but also the higher income and financial endowment are favorable for start-up activities itself as it counteracts the aforementioned financial constraints (Johansson, 2000). Moreover, consequences of business failure are reduced if other job opportunities exist in a prosperous economy (Carrasco, 1999; Parker, 2009). In turn, starting-up does not only end the unemployment of the business owner, but also formation of new and growing firms may lead to more people getting hired, which can reduce the regional unemployment rate indirectly. Hart and Oulton (1999) and Lawless (2014) find that in particular younger firms contribute to job creation and growth more than well-established companies, which may create a positive side effect of reverse causality.

The second, the so-called *Recession-Push* Hypothesis, assumes a countercyclical relationship between formation-rates and economic circumstances. At these times unemployed persons are more likely to attempt to become self-employed, as opportunities for a dependency based opportunity are missing (Oxenfeldt, 1943; Dawson et al., 2009; Parker, 2009; Congregado et al., 2012b). Unemployment works then as push factor for self-employment, as unemployed persons are often "entrepreneurs out of necessity" (Reynolds et al., 2005; Von Greiff, 2009; Dawson and Henley, 2012; Poschke, 2013). A substantial share (a fifth to a third) of the entrepreneurs in the developed countries (Global Entrepreneurship Monitor, 2014) are represented by formerly unemployed persons. The line of reasoning behind this empirical observation is that in cases of unemployment, this disadvantaged status is accompanied by a loss of firm-specific human capital and, thus,

lower expected wages in the future (Hamermesh, 1987; Poschke, 2013). Likewise, lower reservation wages increase the probability of becoming self-employed as starting up a business becomes relatively more attractive. However, businesses founded by formerly unemployed persons have a higher probability of failure (see e.g. Carrasco, 1999; Pfeiffer and Reize, 2000; Andersson and Wadensjö, 2007). In such circumstances, self-employment may again turn into unemployment. These tendencies all point to the interdependent character of unemployment and self-employment.

3.2.2.2 Institutional settings

Finally, institutional settings are likely relevant for becoming self-employed. As empirical evidence points to imperfections in the credit market, which tend to discriminate against socio-economic groups (Meager, 1996; Cavalluzzo et al., 2002; Blanchflower et al., 2003; Blanchard et al., 2008; Blanchflower, 2009), political interventions counter the lack of financial resources at the point of starting up. To provide these resources to the unemployed, start-up subsidies are usually introduced (Santarelli and Vivarelli, 2007).[35] These "Welfare Bridges" commonly grant a predefined payment after starting up, endowing business owners with financial capital for a fixed period. The provision of start-up subsidies acts as an important financial incentive, making self-employment attractive in pecuniary terms, and ends unemployment.

[35] Indirectly, these policies counteract the depreciation of the human capital, too, as they act as an easy access to get people back to work, whereby new skills can be acquired. Often start-up subsidies are complemented by training measures and consulting services for entrepreneurial skills. By that, policy makers try to correct the lack of entrepreneurial human capital (Brüderl et al., 1992; Berge et al., 2014). Since no data on these measures are available, this issue is not pursued any further. Anyhow, the collaboration of consulting services, start-up subsidies and unemployment rates would be an interesting field of further research.

3.3 Evaluation Studies

It seems highly doubtful whether start-up aid will only work in such a way as to put an end to unemployment and, at best, create indirect employment effects. Accompanied by the increased interest in ALMP in general (Brown and Koettl, 2015; Saint-Paul, 2015), the evaluation of such entrepreneurial programs and its economic effects has grown. ALMP programs differ significantly in their employment success and results about their impact are often not encouraging.[36] However, Martin and Grubb (2001) state that private sector employment subsidies, like self-employment subsidies or wage subsidies, are most likely to be effective. To pursue the target of success, business start-up subsidies should be targeted towards "the minority among the unemployed who have entrepreneurial skills and the motivation to survive in a competitive environment" (Martin and Grubb, 2001, p. 23).

3.3.1 Studies on the participant level

A large body of the literature (see Chapter 4 for a literature review) addresses the outcomes of supported businesses on the participant level. For the participants of ALMP it is explained whether or not, and how, their participation in the program has a positive influence on an individual output variable of the formerly unemployed persons or the business. In general, results are quite promising and optimistic (Caliendo, 2016; Dvouletỳ and Lukeš, 2016) and the subsidy is identified as a positive influencing factor on the start-up success for participants. For example, Andersson and Wadensjö (2007) find in a sample of Swedish entrepreneurs positive effects (relatively lower exit rates, more income) of

[36] For a comprehensive meta-study for European ALMP see Kluve (2010) and for the US see Greenberg et al. (2003). A recent study is also presented by Card et al. (2015).

start-up assistance. Formerly unemployed owners who benefited from subsidies perform significantly better than those unemployed, who did not receive public support. However, the authors state that the relationship between correlation and causality is not totally clear. On the one hand, it could be a direct impact of the subsidy; on the other hand, it may be a result of a positive selection bias by the promotional institution. For the German Labor Market, Caliendo and Kritikos (2010) find substantial individual employment effects not only for successful start-ups, but also for formerly subsidized entrepreneurs who found a dependent employment in the case of termination of the business. This might be attributed to the acquired skills during the self-employment phase. For Germany, Wolff et al. (2016) show that the subsidy is a strong incentive for unemployed persons to start their own businesses. It is a preferable alternative compared to an ongoing job-search, as the probability of being a receiver of welfare benefits is lowered in the short- and mid-term. Comparing subsidized businesses founded by formerly unemployed persons with regular business owners, Caliendo (2016) found that comparatively higher survival rates are found for the supported business owners, but firm key performance indicators (income, growth, innovation) are lower. However, Meager et al. (2003a) found in the UK no statistical evidence about the subsequent employability or income effects of supported individuals, who leave these measures and become employees again.

3.3.2 Macroeconomic evaluation studies

As participation effects of start-up subsidies for the individual indicate positive results but are not unambiguous, macroeconomic evaluations of ALMP are highly relevant. Although, an ineffective ALMP for the employability of a participant group hardly ever will be successful on

the macroeconomic level (Kluve et al., 2002), success of an instrument on the individual level rarely gives an indication about particular impacts in a broader context. Economic literature about employment effects of ALMP programs through start-up subsidies on the aggregated macroeconomic level is rather rare. This is quite surprising, since these instruments do not only affect the status of unemployment; they similarly cause spillover effects on non-participants. Moreover, by focusing only on the direct effects of ALMP, one can create misleading results and, thus, inappropriate political implications (Crépon et al., 2013).

For the purpose of a comprehensive overview of start-up subsidies, it is important to know, that macroeconomic evaluations can only complement microeconomic studies. Where evaluation studies of participants give an indication of the extent of singular effects, macroeconomic approaches aggregate them all and yield a net effect, in the sense of analyzing both direct and indirect effects of ALMP (see e.g. Dauth et al., 2016 on this topic). This is of general public interest as net effects condense the complex structure of the start-up subsidies, making evaluation of their overall economic effectiveness possible.

However, as said before, it is not clear whether start-up incentives lead to positive employment effects. Following the pioneering remarks of Calmfors (1995) as well as Calmfors and Skedinger (1995), Meager (1996), Fehr et al. (2002) and Abbring and Heckman (2007), negative effects of ALMP also have to be taken into account to estimate net effects of ALMP. Self-employment created by the ALMP programs can crowd-out other self-employed, established companies, as well as their employees or be ineffective in promoting the formation of additional businesses, respectively. This may happen through three channels.

First, *dead-weight effects* may be highly important as a push effect (see Section 3.2.2.1) from unemployment to self-employment exists. Dead-

weight losses would occur, if the unemployed person would have set up the company anyways, without ALMP funding. It is difficult to detect these effects on an individual level. Nevertheless, Caliendo et al. (2012) propose a distinction between dead-weight losses in the broader and in the narrower sense in a survey for the German "Gründungszuschuss", which is one of the investigated objects in the present study. The definition in the widest sense of the word, the unemployed would have started-up without the subsidization, is observed by the authors in 47% of the supported businesses. The latter and sensu stricto characterization assumes that a dead-weight loss only occurs if the subsidization has not affected the success of the business at all (in the first six months after start-up). This was confirmed by 19% of the sample of the survey. In other studies (Wilson and Adams, 1994; Meager, 1996; Meager et al., 2003a; Caliendo, 2016; Section 4 of this thesis) the range of dead-weight losses varies between 15% up to 60%.

Second, the existence of such start-up incentives and grants increase the opportunity costs of being an employee or staying an unsubsidized self-employed worker. As a result of the earlier mentioned labor market approach, a shift from potential dependent employment or an exit of unsubsidized self-employment to supported business formation is imaginable (Meager, 1996; Santarelli and Vivarelli, 2007). The subsidy would not create additional employment then, but substitute dependent employment with self-employment or enhance job-to-unemployment-to-job mobility. An individual evaluation study would indicate the existence of an effective ALMP program, since the data would register a transition from unemployment to employment (Calmfors and Skedinger, 1995; Fehr et al., 2002). As *substitution effects* cannot be ruled out completely, this is why macroeconomic studies are expedient.

Third, as stressed in Section 3.2.1.1, policymakers usually justify start-up subsidies as an answer to capital market's failing to providing suitable loans or other financial services to the unemployed (Meager, 1996; for a broader discussion on this topic see also Section 4.4.1.2). This hinders the unemployed in founding a business and competing in a market environment. However, in contrast to loans, the grants given are not refundable by definition. That is, the bequeathed capital is permanently available for the purposes of the start-up and investments are not linked to expected payback annuities. Unlike micro-financing instruments (Leone and Porretta, 2014; Minnetti et al., 2016), the promotion of grants does not target the capital market, on which the market failure is detected. In fact, the market for goods and services is influenced by start-up subsidies for the unemployed negatively in the form of *displacement effects*. Santarelli and Vivarelli (2007) discuss, that due to higher capital endowment, supported self-employed persons can supply at relatively lower prices and - in the mid-term - can displace established firms, which do not participate in the measure and do not experience this cost advantage. The displacement effect can lead to a circular process: when the appropriation period ends, the former subsidized firm loses its cost advantage and starts to compete with the currently subsidized firms. This can be called as a "revolving door" mechanism, which is characterized by recurring firm entries and exits as well as temporary job creation.

3.4 Methodology

3.4.1 Theoretical framework

To follow the approach of Pissarides (2000) a matching function in order to analyze the employment effects of start-up subsidies on regional

labor markets is used. Matching models abstract from the complex fitting procedures of job-seekers and vacancies and the various concerned parties (unemployed, firms, the employment agency, policy makers, ...), respectively. However, they provide a useful instrument to demonstrate interrelationships on labor markets. The approach of this paper is that the benchmark model of the matching of unemployed and vacancies in a stock-flow environment is augmented with the introduction of start-up policies. In the following, considerations about the use of such a stock-flow model are presented.

The basic assumption of the ALMP programs[37] is that more unemployed people will be able to end their unemployment as a result of the provision of support. Thus, the approach of this paper is that the benchmark model of the matching of unemployed persons and vacancies in a stock-flow environment is augmented with the introduction of start-up policies. In the following sections, considerations about the use of such a stock-flow model are presented.

Given the stated purpose of these ALMP programs, matches (m) on the labor market are used as the dependent variable. These matches are registered outflows from the stock of the unemployed into the regular

[37] To give an impression of the regulative and normative motivations, the official bulletin about the observed measures state the following: The Federal Government emphasizes the "very favorable effects" of the start-up subsidization for the employability of the participants (Bundesregierung der Bundesrepublik Deutschland, 2006, p. 167; Deutscher Bundestag, 2006, p. 30) as well as the general employment creation. In turn, the Operational Program for the European Social Fund in Thuringia for the Period 2007 to 2013 (Thüringer Ministerium für Wirtschaft, Arbeit und Technologie, 2007, p. 98f., p. 103) explains that "growth-oriented start-ups" by the unemployed should be supported by grants and an integration in the labor market through transition benefits for self-employed ought to happen. The measures also aim to increase the regional self-employment rate. In both cases, the consideration of quality, the aim to contribute to a drop in unemployment and the stimulation of the economy, respectively, are highlighted.

labor market, that is, any kind of income generating employment.

To estimate these outflows one has to consider the behavior of the unemployed and firms on the labor market simultaneously. The model generally bases itself on the assumptions, that either matches

1. of a recently unemployed (u) and an existing vacancy from the stock (V),
2. or of an continuing unemployed in the stock (U) and a new offered vacancy (v)

take place. They are expected to be more likely than matches between the stocks of unemployed and vacancies. Coles and Smith (1998) state that an individual who just became unemployed will be registered as an inflow (u) into the existing stock of the unemployed (U). On the supply side of the labor market, this unemployed person is most likely looking for a new job from the existing stock of vacancies V. On the demand side, firms with a new vacancy, which will be denoted as inflows v into the stock of open vacancies, are probably screening for a suitable applicant within the stock of unemployed U. Only if no market transaction takes place, further searching proceedings have to be made by both parties. Therefore, the same rationale applies one period later. With the remaining formerly newly unemployed now counting to the stock of all unemployed, then it is even more likely that they will concentrate on the newly incoming vacancies (inflow). The unemployed, in turn, developed a sufficient market overview about existing vacancies, without being recruited or having successfully applied. This makes a future stock-stock match unlikely. Also firms have screened the stock of the unemployed, so they will focus on the new incoming jobless.

Formalized, this leads us to equation (3.1), showing the relationship of matches, unemployed and vacancies:

$$m = A \cdot f\left(u, U, v, V\right) \tag{3.1}$$

where A denotes a factor of the efficiency of these matching processes on the market as such. Coles and Smith (1998) suggest that matches benefit from increasing inflows of new vacancies ($m'_v > 0$) as matches with the stock of the unemployed become more likely. However, it is not clear how the matching process depends on the stock and newly incoming unemployed. On the one side, high inflows and high stocks of unemployment indicate unfavorable economic conditions. In these circumstances matches are unlikely, as vacancies are non-existing or highly competitive. On the other side, in a flexible labor market, those unemployed act as the source of matching if reintegration takes place rather quickly. As a consequence of the Hartz-Reforms in Germany, it is assumed that the latter assumption holds true and a positive influence for the stock and inflows of unemployment on the matching process exists, respectively ($m'_U > 0$ and $m'_u > 0$). For the stock of vacancies, no significant impact on the explanatory variable is expected ($m'_V = 0$) (cf. Fahr and Sunde, 2009; Klinger and Rothe, 2012).

By considering the inflows p and stocks P of the start-up subsidies in equation 3.1, the question of whether ALMP in kind of grants to start-ups for unemployed help to reduce unemployment in a regional perspective should be answered, leading to equation (3.2).

$$m = A \cdot f\left(u, U, v, V, p, P\right) \tag{3.2}$$

To follow the policy hypothesis that the more start-ups are supported, the higher the outflows from unemployment ought to be, it is assumed

that $m'_p > 0$ holds true. The provision of the start-up program should act as additional (inflowing) and direct job opportunities to the unemployed. As the vast majority of the supported start-ups are solo-entrepreneurs (Caliendo et al., 2012) an indirect job creation would be expected to come mostly from the stock of the supported start-ups ($m'_P > 0$).[38]

3.4.2 Data

The data is received from two distinct German authorities. First, the stocks as well as inflows and outflows of unemployment and vacancies are taken from official full data by the *Federal Employment Agency (FEA)*. Also the data about the federal start-up support GZ (see e.g. Caliendo and Kritikos, 2009; Caliendo et al., 2012; Caliendo et al., 2015) is provided by the FEA. Second, the full data set about the regional start-up subsidy *Existenzgründerrichtlinie (EXI)* is reported by the *Gesellschaft für Arbeits- und Wirtschaftsförderung des Freistaats Thüringen mbH (GFAW)*. All information is reported on a monthly and regional basis.[39] The regions are administrative districts *(Kreise)* and correspond to the European NUTS-3 (Nomenclature of Territorial Units for Statistics) in the federal state of Thuringia. The 23 administration units of Thuringia separate in 17 rural districts *(Landkreise)* and six urban districts *(Kreisfreie Städte)*. The focus is set on the time

[38] However, by focusing on net effects in this study, insignificant or negative coefficients of the respected variables would indicate to the existence of equalizing dead-weight, substitution or displacement effects by the start-up subsidies.

[39] Due to privacy protection, however, inflows and stocks into the GZ measure are not reported for a month and region if only one or two unemployed persons had founded a supported business in this particular region. Data is controlled for those missing values. The stocks and flows for the EXI are full data and a result of compulsory subsidy controlling system by the European Union.

between January 2007 and December 2014.[40]

In order to understand the interactions of the labor market with the start-up subsidies offered, it is important to know that the unemployed are segmented into individual groups. At first, unemployed persons are allowed to receive unemployment benefits from the German Social Code III (*Sozialgesetzbuch III* – hereinafter *SGBIII*), if they paid unemployment insurance contributions. The unemployment benefits depend on previous working income, that is, it is only paid if the benefits are higher than the calculated basic security benefit. Typically, financial support from SGBIII lasts for a maximum of twelve months. Thus, SGBIII unemployed persons are characterized by recent job experiences and – compared to other unemployed groups in Germany – on average better educated.[41] In contrast to that, for the second unemployment group of the German Social Code 2 (*Sozialgesetzbuch II* – hereinafter *SGBII*) payments act as a basic security benefit for job seekers and are means-tested. Additionally, it supports recently unemployed whose former labor income was comparatively low. They are characterized by a lower level of human capital, too. Additionally, after the eligibility period of twelve months of SGBIII, long-term

[40] The period is chosen for the following reasons. In Germany the Hartz reforms, introduced between the years 2003 and 2005, caused the most influential changes in the social security system in recent decades. The reforms encompassed a structural break in the supply of public welfare services and ALMPs – such as the GZ – as well. As they were well implemented in 2007, no further structural shifts have to be expected and have to be controlled for. For a broad overview and impact analysis of the Hartz Reforms see e.g. Jacobi and Kluve (2006), Fahr and Sunde (2009) or Klinger and Rothe (2012). Further, the remarkable decrease of unemployment since the introduction of the Hartz-Reforms and the financial and economic crisis of 2008 to 2010 provide an interesting setting, whereby both variation and a check of robustness for the model is received. Lastly, the reviewed period strongly interrelates to the funding period of the EXI, which was in force from July 2007 to December 2014.

[41] A broad overview about different characteristics of the unemployed and start-up measures can be found in Section 2.2.2.

unemployed shift to the SGBII.

The FEA administers the start-up support GZ and they only allow unemployed persons receiving SGBIII-payments to apply for the measure. Interestingly, until December 2011, unemployed persons were able to make a claim on the subsidization. Since then, the start-up subsidy has shifted to a nonobligatory service and administrators of the FEA are responsible for making a decision on applications (Bernhard and Grüttner, 2015; Bellmann et al., 2017). Further, unemployed in the federal state of Thuringia were allowed to apply for the regional start-up support EXI, administrated by the regional authority GFAW. Due to the obligatory service of GZ until the end of 2011, EXI was only offered to those unemployed persons receiving payments of the SGBII or without any public support at that time. Since the policy shift, it was also opened to SGBIII receivers who the FEA denied GZ.

For a first glance the number of the participants in total and over time of the two policies is shown to Figure 3.1. A steady inflow into the measures can be seen for the 23 administrative districts of Thuringia. Due to the above-mentioned policy shift, denied applicants of GZ who still benefit from the unemployment allowance of the SGBIII were able to apply for EXI since December 2011. This caused a remarkable change in the distribution and significance of the measures, which is illustrated by a vertical line. The largest variation can be seen in the state capital (EF) and the, in terms of surface area, largest districts (SLF, SOK and SM), whereas it is lowest in minor urban districts (EA and SHL) as well the district of SON. After the shift and due to the conversion of the GZ from an obligatory service to a discretionary benefit, a structural change can be found. Before the policy shift, GZ dominated EXI in terms of the number of participants; the reverse pictures emerge on a lower level after the policy shift. This holds true

until EXI expired in December 2014.[42]

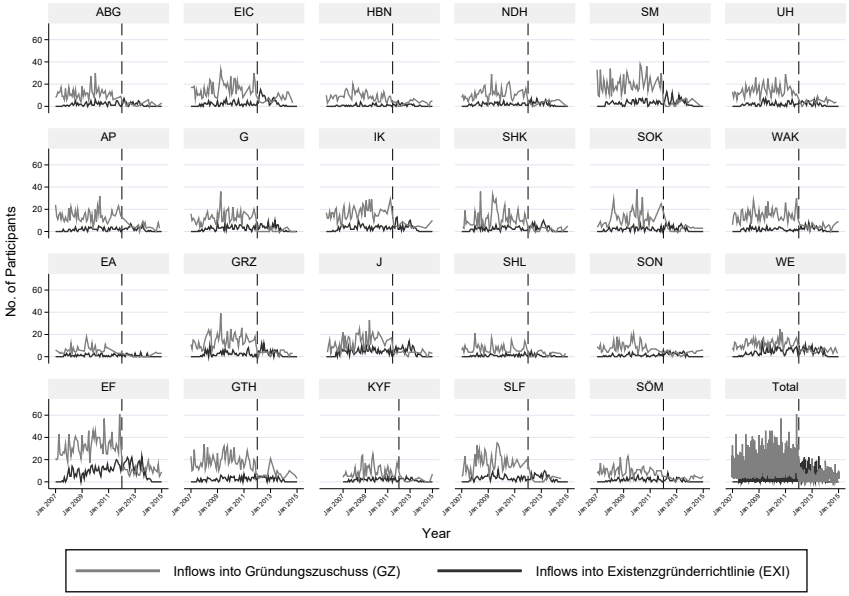


Figure 3.1: Inflows into start-up subsidy measures

Notes: In Figure 3.1, the monthly inflows into the measures *Gründungszuschuss (GZ)* and *Existenzgründerrichtlinie (EXI)* in the years 2007 to 2014 in the 23 districts of Thuringia are illustrated. The vertical line in December 2011 represents the policy shift when the GZ was turned from a obligatory to a non-obligatory service.
Source: Statistics of the FEA and GFAW; authors' own calculations and illustrations.

To get an overview about the size and distribution of the main vari-

[42] A third measure for start-up subsidies for the unemployed existed in Germany and Thuringia as well during that time, namely the *Einstiegsgeld (EG)* (Wolff and Nivorozhkin, 2012; Pongratz et al., 2013; Wolff et al., 2016). In terms of entry, EG, however, does not amount to more than 6% of all unemployed, who received a start-up subsidy during the observation period. Due to data restrictions, not all information needed are provided by administrative records, which is why EG has not been analyzed. Given the minor importance of the instrument in terms of the number of participants, the impact on the results is assumed to be negligible.

ables, Table 3.1 shows descriptive statistics of the years from 2007 to 2014. The median monthly outflows from unemployment into employment are mainly driven by the employment of SGBIII-unemployed (236 to 167), while the median stocks of unemployed are much lower (1,699 to 2,968). This indicates the comparatively higher probability of SGBIII-unemployed to join the workforce again. The inflows into unemployment are relatively evenly distributed (524 to 503).

Table 3.1: Descriptive statistics of main variables

	Mean	SD	Min	Max	P50
Outflow from Unempl.	464.94	234.06	89.00	1,555.00	413.00
Outflow from Unempl. (SGBII)	201.71	127.44	19.00	826.00	167.00
Outflow from Unempl. (SGBIII)	263.74	135.14	40.00	975.00	236.00
Stock of Unempl.	5,092.53	2,389.82	1,127.00	16,776.00	4,769.00
Stock of Unempl. (SGBII)	3,247.81	1,713.32	425.00	11,664.00	2,968.00
Stock of Unempl. (SGBIII)	1844.72	835.52	368.00	5,132.00	1,699.00
Stock of Vacancies	615.83	357.33	115.00	2,705.00	525.50
Inflow into Unempl.	1,150.32	531.35	331.00	3,761.00	1,052.00
Inflow into Unempl. (SGBII)	577.28	332.95	155.00	2,405.00	503.00
Inflow into Unempl. (SGBIII)	573.12	271.73	112.00	1,988.00	524.50
Increase in Vacancies	267.99	175.75	52.00	1,252.00	220.00
Stock of EXI	28.86	27.36	0.00	196.00	25.00
Stock of GZ	126.79	87.00	0.00	462.00	125.00
Inflow into EXI	2.55	3.02	0.00	23.00	2.00
Inflow into GZ	8.59	8.80	0.00	61.00	7.00

Source: Statistics of the FEA and GFAW; authors' own calculations.

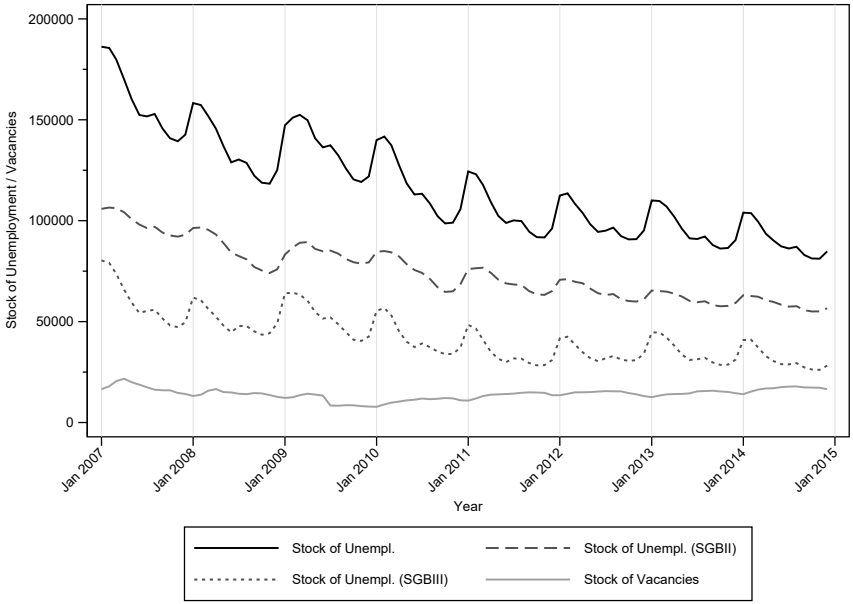


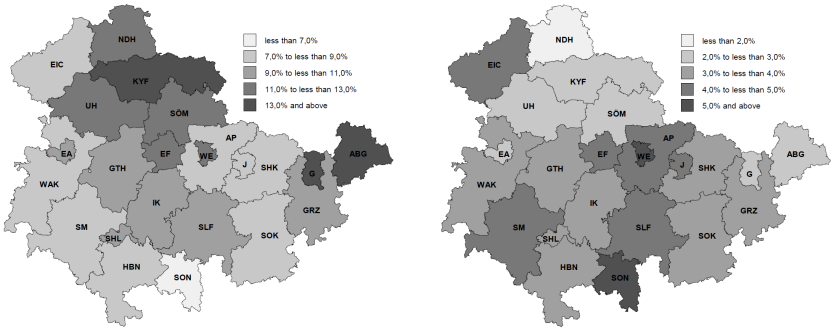
Figure 3.2: Development of the stocks of unemployed persons and vacancies in Thuringia

Notes: In Figure 3.2, the monthly stocks of the unemployed (as total and divided into SGBII and SGBIII as well) and vacancies are shown for the years 2007 to 2014.
Source: Statistics of the FEA; authors' own calculations and illustrations.

During that period of 8 years, the total number of unemployed in Thuringia nearly halved from about 180,000 to 80,000 unemployed (unemployment rate dropped from 13.8% to 7.8%, respectively) as can be seen in Figure 3.2. It is equally important to recognize the seasonal employment effects on the labor market. The economic crisis in the years of 2008 to 2010 had no major impact on the stocks of the unemployed. The positive development only slightly slowed down. The demand of labor, represented by the stocks of vacancies, shows a significant downturn in that time, which recovered to the pre-crisis level

before the observation period ends.

From the regional perspective, we see a remarkable divergence in the unemployment rate (Figure 3.3a) and participation rate (Figure 3.3b) for the examined period (2008 to 2013).[43] Whereas the participation rate of the unemployed is comparatively high in the middle and south of Thuringia, unemployment is a larger problem in the northern and eastern parts of this federal state. The figures indicate a spatial negative correlation between the unemployment rate and the self-employment rate that would be in line with the recession-push theory.



(a) Average unemployment rates **(b)** Average participation rates

Figure 3.3: Regional distribution of unemployed persons and start-up subsidy participants

Notes: In Figure 3.3a, the average unemployment rates (Social Code II and III) in the years 2008 to 2013 in the 23 districts of Thuringia is illustrated. In Figure 3.3b, the stocks of start-up subsidy participants divided by the stock of all current unemployed for the same period are outlined.
Source: Statistics of the FEA and GFAW; authors' own calculations and illustrations.

[43] Due to implementation and phasing out of the EXI in 2007 and 2014, respectively, these years are excluded.

3.4.3 Econometric specification

Basically, it is subsidiary if a federal (GZ) or regional (EXI) authority initiated an entrepreneurship policy. The relevant realization and thus the main effects always occur (first) on the participant level (see Section 3.3.1). Thus, the lowest form of spatial aggregation of those participants is represented by regional labor markets (Audretsch et al., 2007). Since regional settings and policies are meaningful for the influence of entrepreneurship policies (Altavilla and Caroleo, 2013; Caliendo and Künn, 2014), the work of Dauth et al. (2016) for the Austrian, Altavilla and Caroleo (2006) for the Italian and the remarks of Hujer et al. (2006), Hujer et al. (2009), Fahr and Sunde (2009) and Klinger and Rothe (2012) for the German labor market are followed and an explanatory matching-model on a regional level (districts) will be implemented.

3.4.3.1 Hypotheses–related variables

The stock-flow model is estimated for the observed matches m_{rt} in region r ($r = 1, ..., R$) at time t ($t = 1, ..., T$). Closely following the literature, equation (3.2) is rewritten as a general Cobb-Douglas-function in a log-linear version and equation (3.3) is received:

$$\begin{aligned} \ln m_{rt} = a + \alpha_1 \ln u_{rt} + \alpha_2 \ln U_{rt-1} + \beta_1 \ln v_{rt} + \beta_2 \ln V_{rt-1} \\ + \gamma_{1k} \ln p_{krt} + \gamma_{2k} \ln P_{krt-1} + \varepsilon_{rt}. \end{aligned} \tag{3.3}$$

The dependent variable (matches m) represents outflows from unemployment into gainful occupation. Unemployed who enter a wage-subsidized employment in the regular labor market or job creation schemes are included in the outflows. The lagged independent variables U_{rt-1}, V_{rt-1} and P_{krt-1} indicate the respective stock of unem-

ployed persons, vacancies and supported start-ups, which are reported at the end of the previous period.[44] Hereby, it is allowed for possible delays by one period in registration. Also by using this time lag the general matching process out of stocks, as was mentioned in Section 3.4.1 before, is considered. To test for differences between the distinctive start-up measures the index k is introduced.

3.4.3.2 Control variables

When implementing such a stock-flow matching model, it is necessary to control for a number of factors. First, periodical features are corrected by using time fixed effects d_t.[45] The time dummies for the month and years are used to account for seasonal effects in the stock and flow of unemployed as well as the vacancies. By that, the typical spring upturn in the labor market and business cycle downturns in the years 2008 to 2010 as well as the following v-shaped recovery in Germany is

[44] Unregistered unemployed are not captured in the estimation. Regardless, only slight biases are expected by that, as they are not allowed to apply for the observed start-up subsidies. Even though they might compete for the same vacancies. The vacancies reported are full-time or part-time offers and subject to social insurance contributions. Although, the data exists on the same levels as it does for the unemployed, the announcement is not mandatory to businesses, which are willing to fill a vacancy. However, no information about the number of unreported vacancies and the account of job-to-job matches are known, so the data is not corrected for these issues. Franz (2013) suggests to use of some kind of market share of the unemployment agency. This could be reached by using the reported vacancies relative to all fresh engagements, but this data is not available on the regional and monthly level.

[45] Applying the Hausman-test, which states that the null hypothesis (the differences in coefficients are not systematic) has to be rejected, a fixed effects regression in comparison to both the pooled OLS as well as the random effects regression has to be preferred. After performing a Wald test (Ho: dummies for all time variables are jointly equal to 0), it is also shown, that time fixed effects are needed.

covered.

$$\begin{aligned}\ln m_{rt} = a + \alpha_1 \ln u_{rt} + \alpha_2 \ln U_{rt-1} + \beta_1 \ln v_{rt} + \beta_2 \ln V_{rt-1} \\ + \gamma_{1k} \ln p_{krt} + \gamma_{2k} \ln P_{krt-1} + d_r + d_t + \varepsilon_{rt}.\end{aligned} \tag{3.4}$$

The federal state of Thuringia is regionally heterogeneous as rural and urban areas exist. Therefore, regional fixed effects d_r are used in equation (3.4) in order to capture structural differences in characteristics of the administrative districts. The model, thus, focuses on within variation by controlling out the between regional variation. Nevertheless, the regional administration units in Thuringia, like in the rest of Germany (cf. Hujer et al., 2009), do not necessarily fit to the relevant labor market, that is, the administrative regions are not spatially independent. Additionally, there are good reasons to believe that employers do not restrict their search activities to the regional (administrative) labor market to fill their vacancies. Furthermore, changes in economic circumstances hardly ever affect only single regions.

With regional dependency likely to be present, the estimation model is thus augmented by the sum $\sum_{s \neq r} w_{rs} m_{st}$ with a spatially lagged variable (cf. Anselin, 2002). By definition this mathematical term is endogenous but controls for the expected spatial dependencies and interrelations. Therefore, m_{st} represents matches in a region s being distinctive of region r at the same period t. To capture the variation and importance from matches in a region s for an observed region r, those matches m_{st} are weighted by w_{rs}. Following Dauth et al. (2016) the raw weights equal 1 if the driving time between regions r and s is not more than one hour, and otherwise 0. Formally, this binary spatial weight matrix is a $R \times R$ positive matrix W with zeros on the main diagonal ($w_{rr} = 0$). As spatial weight matrices are typically row standardized, the raw weight matrix is transformed to a normalized

matrix for which counts $\sum_{s=1}^{S} w_{rs} = 1$ for each region r. The related regression coefficient is ρ. This leads to equation (3.5).[46]

$$\begin{aligned} \ln m_{rt} = {} & a + \alpha_1 \ln u_{rt} + \alpha_2 \ln U_{rt-1} + \beta_1 \ln v_{rt} + \beta_2 \ln V_{rt-1} \\ & + \gamma_{1k} \ln p_{krt} + \gamma_{2k} \ln P_{krt-1} + \rho \ln(\sum_{s \neq r} w_{rs} m_{st}) \\ & + d_r + d_t + \varepsilon_{rt}. \end{aligned} \tag{3.5}$$

Another specification refers to the investigation of matching processes by differences in occupations (Fahr and Sunde, 2009) or by sectors (Broersma and Van Ours, 1999). The underlying assumption, that differences in the matching process are driven by financial and human capital, is captured in this paper by the differentiation of the German Social Codes (see Section 3.4.2). To check whether the policy measures show different impacts on the beneficiaries with their on average different characteristics, equation (3.5) is augmented by the index c (see equation (3.6)). It can either have the value II (SGBII-unemployed characterized by a lower endowment of human and financial capital, higher probability of long-term unemployed) or III (SGBIII-unemployed characterized by a comparatively higher endowment of human and financial capital, predominantly short-term unemployed), where $m = m_{II} + m_{III}$, $U = U_{II} + U_{III}$, $u = u_{II} + u_{III}$ and in the case of EXI ($k = 2$) $p_2 = p_{II2} + p_{III2}$ as well as $P_2 = P_{II2} + P_{III2}$ holds true. To control for the frequently made assumption that a higher share of long-term unemployment U^L in relation to short-term unemployment U^S leads to a lower effectiveness of the matching process (cf.

[46] A simple contiguity matrix, like those presented in Anselin (2002), would not be appropriate to capture the topographical and infrastructural profile of Thuringia. This is even truer as an east-west highway in the middle of Thuringia connects a number of cities in the six biggest municipal units. South of that high way a central German upland is situated, which separates the federal state in a northern and southern part.

Blanchard and Diamond, 1994; Pissarides, 2000), it is also controlled for the share of the long-term unemployed in relation to all unemployed $U = U^L + U^S$, which leads to the term $(U^L_{crt-1}) \cdot (U^L_{crt-1} + U^S_{crt-1})^{-1}$ and, thus, equation (3.6).

$$\begin{aligned} \ln m_{crt} = {} & a_c + \alpha_{1c} \ln u_{crt} + \alpha_{2c} \ln U_{crt-1} + \beta_{1c} \ln v_{rt} + \beta_{2c} \ln V_{rt-1} \\ & + \gamma_{1ck} \ln p_{ckrt} + \gamma_{2ck} \ln P_{ckrt-1} + \rho_c \ln(\sum_{s \neq r} w_{rs} m_{cst}) \\ & + d_r + d_t + \phi_c(U^L_{crt-1}) \cdot (U^L_{crt-1} + U^S_{crt-1})^{-1} + \varepsilon_{crt}. \end{aligned} \tag{3.6}$$

3.4.3.3 Regression design

A frequently quoted concern about the usage of stock-flow estimations certainly appears at this point. To get consistent results, the inherent relationship between inflows, outflows and stocks have to be taken into account. The connection is represented as an example in equation (3.7), wherein it is shown that m_{crt-1} is even an implicit part of the right hand side of equation (3.6) as it highly correlates and corresponds widely to the sum of all outflows.[47]

$$U_{crt} = U_{crt-1} + u_{crt-1} - m_{crt-1} \tag{3.7}$$

In any case, the model variables would correlate to the error term, that is, autocorrelation appears for the error term ε_{crt}. Indeed, the Wooldridge (2010) test for autocorrelation in panel data indicates, that the null hypothesis of no first-order autocorrelation has to be rejected. Additionally, as time periods T largely exceed the number of

[47] For the concrete composition of the outflows in the model, see the data description in Section 3.4.2. The same relation holds true for the stocks of the vacancies and start-up support.

regions R, heteroscedasticity may be expected in the model environment. Following Greene (2003, p. 324) one has to test for group-wise heteroscedasticity in the residuals of a fixed effect regression model. This is the case in the data structure used. Finally, time-series cross-sectional (TSCS) macro panels with a comparatively large number of time periods T may also cause cross-sectional dependence, which is why Pesaran's cross-sectional dependence test is applied. It shows whether residuals across entities correlate or not. The former is found in the data structure, which is a common issue in TCSC settings. For the purpose of statistical inference and to address the above-mentioned issues, a Prais–Winsten regression (Plümper et al., 2005) with panel-corrected standard errors is implemented (Beck and Katz, 1995; Hoechle, 2007; Beck and Katz, 2011).

3.5 Empirical results

3.5.1 General stock-flow-matching-model

In this subsection the implementation of the general stock-flow environment is tested, before in subsection 3.5.2 the augmentation of the model by implementing start-up subsidies take place and further robustness checks examined. All results are presented in Tables 3.2, 3.3 and 3.4.

Model (1) in Table 3.2 shows a baseline model of the matching function of the regional labor markets in Thuringia. The coefficients of the log-linear model can be interpreted as elasticities. According to the assumptions of the stock-flow environment presented in section 3.4.1, matching-elasticities for the stock of unemployed as well as inflows into it and the new vacancies are positive and highly significant. The highest elasticity for the number of matches occurs from the stock of

unemployed (elasticity of 0.701), which is consistent with respect to the scales presented by Petrongolo and Pissarides (2001, p. 393). Implementing the spatially lagged outflows (Table 3.2, model (2)) to control for interregional matching relations, and additionally for the share of long-term unemployed in a region (Table 3.2, model (3)) only slightly change the magnitude of the elasticities, while keeping the significance level constant. However, the explanatory power of the model slightly increases and the elasticity of the stock of vacancies is now positive and significant. Also the spatial lagged matches show a significant and positive impact on the outflows from unemployment in a region, confirming the spatial dependency of the matching processes. A higher share of long-term unemployed significantly hinders job-matches. This is consistent with the literature, as long-term unemployment lowers the effectiveness of the matching process (Blanchard and Diamond, 1994; Pissarides, 2000).

Estimations for the disadvantaged unemployed with a lower endowment of financial and human capital (SGBII) compared to the unemployed who are better-off (SGBIII) can be found in Table 3.3, model (7) and model (11). Obviously, on the demand side of the labor market, new incoming vacancies significantly (at the $p < 0.01$ level) increase the probability of matches on the labor market in all models by a scale of 0.101 and 0.079, respectively. That is, a 1% increase of the number of new incoming vacancies increases the number of outflows from unemployment by 0.101% and 0.079%, respectively. Thus, additional job opportunities cause matches for all unemployment groups. However, evidence for the matches by the stock of vacancies is mixed. While they are a positive and highly significant source of matches for the SGBII unemployed (model (7)) no significant impact can be found for the higher endowed unemployed of the SGBIII (model (11)). This is also in line with the existing literature, as other stock-flow studies for

Germany (see e.g. Fahr and Sunde, 2009; Klinger and Rothe, 2012) show mostly insignificant effects. However, the availability of data may drive this effect, since the models consider only reported vacancies. It is possible that there is some kind of bias, so that reported vacancies are more targeted to unemployed related to the SGBII or reported jobs are more visible for this group.

Table 3.2: Matching proceeding on the labor market – baseline model

Dependent Variable	ln Outflow from Unempl.					
	(1)	(2)	(3)	(4)	(5)	(6)
ln Stock of Unempl. (t-1)	0.701***	0.527***	0.577***	0.585***	0.687***	1.143***
	(0.073)	(0.062)	(0.064)	(0.063)	(0.086)	(0.161)
ln Stock of Vacancies (t-1)	0.031	0.069***	0.073***	0.072***	0.091***	0.042
	(0.023)	(0.018)	(0.019)	(0.018)	(0.021)	(0.037)
ln Inflow into Unempl.	0.321***	0.142***	0.147***	0.144***	0.142***	0.093
	(0.046)	(0.036)	(0.036)	(0.036)	(0.045)	(0.064)
ln Inflow into Vacancies	0.088***	0.077***	0.080***	0.080***	0.080***	0.078***
	(0.015)	(0.013)	(0.013)	(0.013)	(0.015)	(0.023)
ln Spatial lagged Outflow		0.679***	0.648***	0.645***	0.558***	0.614***
		(0.049)	(0.050)	(0.050)	(0.059)	(0.075)
ln Share of long-term Unempl. (t-1)			−0.775***	−0.753***	−0.307*	−0.800***
			(0.140)	(0.138)	(0.186)	(0.309)
ln Stock of EXI(t-1)				0.001	−0.005*	−0.000
				(0.003)	(0.003)	(0.004)
ln Stock of GZ (SGBIII, t-1)				−0.002	0.006	0.001
				(0.014)	(0.032)	(0.015)
ln Inflow into EXI				0.001	0.000	0.001
				(0.001)	(0.001)	(0.002)
ln Inflow into GZ (SGBIII)				0.001	0.026***	0.001
				(0.001)	(0.009)	(0.001)
Constant	−3.377***	−4.976***	−4.909***	−4.919***	−5.801***	−8.814***
	(0.779)	(0.646)	(0.643)	(0.641)	(0.887)	(1.520)
Observations	2,164	2,164	2,094	2,094	1,224	870
LR chi2	16,408.1	18,597.9	19,836.2	20,451.2	17,313.9	24,061.1
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000
R2	0.978	0.984	0.983	0.983	0.983	0.992

Notes: Prais–Winsten Regression with panel corrected standard errors. Robust standard errors in parentheses. Time (month and year) and regional fixed effects included. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

In all models a highly significant and positive effect of the stock of the unemployed indicates to the existing dynamics on the labor market in Germany. Also, the inflow-effect is positive and significant with a coef-

ficient of 0.360 for the SGBII-unemployed (model (7)) and insignificant for the unemployed related to the SGBIII (model (11)). In particular, by model design, this significance of the variable points to the occurrence of reintegration of new unemployed within a month. This may be a possible effect of the Hartz-Reforms and the overall favorable trend of the job market in Germany. Financial constraints may cause the different inflow-effects for the two groups of unemployed. That is, a fast reintegration into the labor market is more relevant for the former group, as unemployment benefits for the SGBIII are comparatively high, while SGBII unemployed only receive basic security benefits. In the sense of the labor market approach, the opportunity costs of unemployment in SGBII are lower than in SGBIII. Also the transition from SGBIII to SGBII, after a period of twelve months of unemployment, act as a strong incentive to find a job as a result of that increasing opportunity costs.

The highly significant negative effect of -0.855 of the share of long-term unemployed for the jobless related to the SGBII (model (7)) is unsurprising. For those long-term unemployed the situation has hardened into some kind of structural unemployment due to a mismatch of supplied skills and labor market demand. During the continuing unemployment, the depreciation of human capital increased this disadvantage and reduced the chances to obtain a job (Hinz and Jungbauer-Gans, 1999; Weber, 2014; Card et al., 2015). In line with that, the corresponding coefficient is lower (-0.697) in the SGBIII model (model (11)) as these unemployed hardly suffer from this stigma. In turn the smaller effect of the spatial lagged outflows (0.222 and 0.699 respectively) of SGBII to SGBIII unemployed may indicate a lower spatial mobility of unemployed with a comparatively lower human capital endowment, as a negative relationship between the level of educated skill and spatial mobility exists (for evidence for Germany see e.g. Arntz,

2010; Granato et al., 2015).

3.5.2 Augmented stock-flow-matching-model with start-up subsidies

This study investigates the hypothesis that start-up subsidies for the unemployed contribute to the reduction of unemployment from a regional perspective. At first sight the results in Table 3.2, model (4) seems not to be in concordance with that hypothesis. After implementing the stocks and flows of the start-up subsidies GZ and EXI, the above discussed (see Section 3.5.1) magnitude and significance of the variables compared to the baseline regressions remain almost unchanged. But neither the stock (indirect employment effects), nor the inflow (direct employment effect) into the start-up subsidy measures GZ and EXI have a statistically and economically significant impact on the number of matches in a region. This points to the existence of counteracting effects as discussed in Section 3.3.2 and the general unlikely transition from unemployment to the status of an employer (Nightingale and Coad, 2013).

However, a differentiated understanding is gained concerning the subgroups of the lesser-endowed unemployed (SGBII) in Table 3.3, model (8) and the higher endowed unemployed (SGBIII) in Table 3.3, model (12), respectively. In the case of EXI (SGBII) no significant effect can be found on the number of matches for the more disadvantaged unemployed group. In this case, the above-mentioned hypothesis must be rejected. In contrast, the support of higher endowed unemployed related to SGBIII show increased and significant direct employment effects in both cases, for the GZ as well as for the EXI. The elasticity of the direct effect of the GZ as well the EXI is, however, rather small in terms of the economical impact as it amounts to 0.003 in model (12),

that is, a 1% increase of the number of participants in the measures increases the number of outflows from unemployment by 0.003%.[48] Also a slight positive indirect employment effect of the supported EXI start-ups can be found.

The question arises, if this kind of ALMP program is a useful and appropriate instrument to reduce unemployment of the target group of SGBII-unemployed persons. Even though the financial support is of comparatively greater need, strong negative employment effects seem to counteract positive participant effects. The presented results also throw doubt on the policy idea, that if program features attract more disadvantaged unemployed persons, higher net employment effects are caused. To shed some more light on that question, in Table 3.2, the regression is divided in the situation before (model (5)) and after (model (6)) the policy shift in December 2011. Again, the sign and significance of the main variables of the stock-flow environment are comparable to the presented baseline model. Before the policy shift, both EXI and GZ were mostly mutually exclusive instruments in regard to their ben-

[48] To give an impression of the effect size: The values presented here are the average elasticity for the values presented in Table 3.1, and thus the average over all regions, years, months, etc. A 1% increase in Inflow into GZ would therefore mean an increase in the average of 8.59 by 0.0859 (= 8.59 · 1%) to 8.6759. At the same time, the outflow from unemployment (SGBIII) would increase from 263.74 by 0.0079122 (= 263.74 · 0.003%) to 263.7479122. The effect in absolute values is therefore not that one participant in the measure directly causes one additional observable outflow out of unemployment, but the effect is on average about one tenth of that (0.0921 = 0.0079122 / 0.0859). However, since this type of calculation assumes a constantly linear relation between the quantities, a conceivable model extension within the framework of further research would therefore be the implementation of a margins plot, so that the effect size could be estimated for a (non-linear) increasing number of participants. However, in the following it will be discussed only the sign and significance of the coefficients, because Dauth et al. (2016) notes: "Yet, from the perspective of policy-makers, the important implication is that there is a positive net effect, that is, increasing ALMP does increase the number of matches rather than simply redistributing the propensity of getting a job among job seekers."

eficiary groups. The differentiated impact of the start-up support on the number of matches by the higher and lower endowed subgroups are again supported by the results. Time independent, the start-up subsidy EXI does not seem to have a significant direct impact on the occurrence of matches on the labor market. As EXI-participants of SGBII are on average significantly better educated than the group of all unemployed persons in relation to SGBII (see Section 2.3), it is likely that they would have also found a dependent job, giving an indication to the existence of dead-weight effects.

It is also important to note that the estimated coefficient of the inflows into GZ is positively significant in Table 3.2, model (5). Elasticities are remarkably higher and positive before the policy shift (0.026), than after it (0.003 and insignificant). Interestingly, even though EXI is more important in terms of participant numbers after the policy shift than GZ, no significant influence on the number of matches has been found. This indicates that a quantity-based promotion of participant numbers not necessarily leads to more matches.

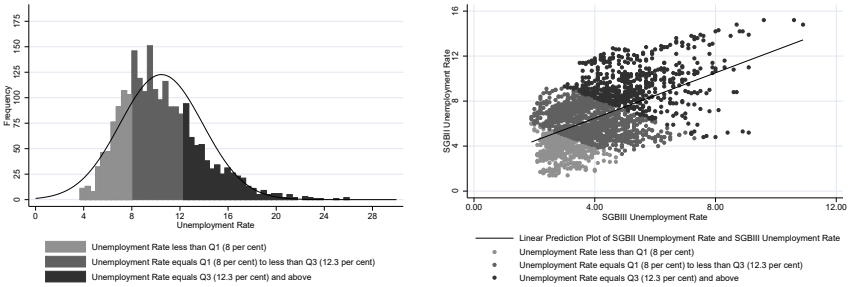
Table 3.3: Matching proceeding on the labor market – augmented model with separation for groups of unemployed persons

Dependent Variable	SGBII-Model Lower endowment				SGBIII-Model Higher endowment			
	ln Outflow from Unempl. (SGBII)				ln Outflow from Unempl. (SGBIII)			
	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
ln Stock of Unempl. (SGBII) (t-1)	0.604***	0.606***	0.681***	0.883***				
	(0.075)	(0.075)	(0.099)	(0.196)				
ln Stock of Unempl. (SGBIII) (t-1)					0.714***	0.712***	0.721***	0.927***
					(0.052)	(0.051)	(0.058)	(0.104)
ln Stock of Vacancies (t-1)	0.104***	0.106***	0.135***	0.119**	0.011	0.013	0.015	0.045
	(0.027)	(0.027)	(0.030)	(0.060)	(0.017)	(0.017)	(0.018)	(0.039)
ln Inflow into Unempl. (SGBII)	0.360***	0.359***	0.349***	0.377***				
	(0.033)	(0.033)	(0.044)	(0.059)				
ln Inflow into Unempl. (SGBIII)					0.035	0.035	−0.044	0.045
					(0.037)	(0.036)	(0.041)	(0.070)
ln Inflow into Vacancies	0.101***	0.102***	0.098***	0.079**	0.079***	0.080***	0.075***	0.112***
	(0.020)	(0.020)	(0.024)	(0.039)	(0.013)	(0.013)	(0.014)	(0.025)
ln Spatial lagged Outflow (SGBII)	0.222***	0.221***	0.169***	0.025				
	(0.041)	(0.041)	(0.054)	(0.072)				
ln Spatial lagged Outflow (SGBIII)					0.669***	0.656***	0.566***	0.644***
					(0.056)	(0.055)	(0.060)	(0.087)
Share of long-term Unempl. (SGBII, t-1)	−0.855***	−0.853***	−0.352	−0.725**				
	(0.151)	(0.151)	(0.218)	(0.337)				
Share of long-term Unempl. (SGBIII, t-1)					−0.697***	−0.678***	−0.373**	−1.946***
					(0.167)	(0.164)	(0.190)	(0.401)
ln Stock of EXI(SGBII, t-1)		0.001	−0.006	0.001				
		(0.003)	(0.004)	(0.006)				
ln Stock of EXI(SGBIII, t-1)						0.002**	0.002	−0.003
						(0.001)	(0.001)	(0.002)
ln Stock of GZ (SGBIII, t-1)						0.009	0.020	0.020
						(0.015)	(0.032)	(0.017)
ln Inflow into EXI (SGBII)		0.000	−0.001	0.002				
		(0.001)	(0.002)	(0.002)				
ln Inflow into EXI (SGBIII)						0.003***	0.002**	0.001
						(0.001)	(0.001)	(0.001)
ln Inflow into GZ (SGBIII)						0.003*	0.039***	0.003
						(0.001)	(0.008)	(0.002)
Constant	−4.112***	−4.115***	−5.029***	−5.579***	−4.835***	−4.770***	−3.994***	−6.052***
	(0.743)	(0.744)	(0.997)	(1.764)	(0.558)	(0.553)	(0.668)	(1.089)
Observations	2,094	2,094	1,224	870	2,190	2,190	1,316	874
LR chi2	13758.5	13,845.6	9,993.4	23,312.1	19,351.5	21,188.8	17,197.7	23,911.6
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R2	0.947	0.947	0.958	0.978	0.985	0.986	0.982	0.991

Notes: Prais–Winsten Regression with panel corrected standard errors. Robust standard errors in parentheses. Time (month and year) and regional fixed effects included. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Matches do not seem to be significantly and positively affected by the stocks of supported start-ups. In contrast, the significant negative effect of the EXI (-0.005) in Table 3.2, model (5) points towards existing negative externalities rather than indirect employment impacts before the policy shift. It is more likely, that the support causes displacement and substitution effects. The regression results before December

2011, separated for the groups of SGBII with the more disadvantaged unemployed (model (9)) and the SGBIII for the unemployed being better off (model (13)) are shown in the Table 3.3, respectively. The complementary regressions after the policy shift are presented in the remaining models 10 and 14. The results are generally supported by this robustness check. While no impact of the EXI start-up support on the SGBII-unemployed is found, positive direct employment effects are only shown for the SGBIII-unemployed and only before the policy shift. The GZ has a significant elasticity of 0.039 in that period, while the EXI has a small but also significant impact of 0.002. The higher impact within the same beneficiary group may be due to the fact, that at this time the GZ was quantitatively more important for the SGBIII-unemployed than the EXI. That is, the start-up subsidy only has a significant impact for a certain target group and a certain period. That also means: The FEA was, after the policy shift, in charge of selecting which unemployed should be eligible for their own future, this has not lead to a higher program effectiveness. As especially before the year 2012 unemployment rates were remarkably higher (see Figure 3.2), this leads inevitably to the question about interdependencies of start-up subsidies and the regional unemployment rates.



(a) Histogram of unemployment rates

(b) Scatter plot of SGBII unemployment rates and SGBIII unemployment rates

Figure 3.4: Distribution of unemployment rates

Notes: In Figure 3.4a, the distribution of the monthly aggregated unemployment rates (unemployment rate of Social Code 2 (SGBII) and unemployment rate of Social Code 3 (SGBIII) in the years 2007 to 2014 in the 23 districts of Thuringia are illustrated. The distribution is divided by quartiles in different unemployment situation (low, middle, high). In Figure 3.4b, the scattered SGBII-unemployment rates and related SGBIII-unemployment rates are shown for the same unemployment situations.

Source: Statistics of the FEA; authors' own calculations and illustrations.

For this purpose, in Table 3.4 the stock-flow matching model regression is performed for three different unemployment situations. In model (15) and (18), the regression results are shown for the lower quartile (Q1), represented by a region r at time t with an unemployment rate lower than 8%. The following regressions (model (16) and (19)) show the interquartile range (Q1 - Q3) of regional unemployment rates ranging from 8% and above to 12.3%. The remaining columns present the high unemployment situation, with a rate of 12.3% and above (Q3). An illustration of the distribution of the regional unemployment rates can be found in Figure 3.4a. The share of the unemployment rate, which is attributed to the different target groups, can be found in Figure

3.4b.[49] For all models the main explanatory variables of the stocks and inflows into unemployment as well as vacancies are comparable to the results presented before. Again, it can be seen that in the SGBII-models (15), (16) and (17) no significant effect on the matching proceedings are caused by the start-up subsidy EXI, independent of the respective unemployment situation. Neither the recession-push nor the prosperity-pull hypothesis can be confirmed.

To sum up, in neither presented models for the SGBII-unemployed the effects of the start-up subsidy measures on the outflows from unemployment are significant. For the case of these unemployed persons, with a comparatively lower endowment of financial and human capital, this measure is not an appropriate policy to cause subsequent employment effects. So, program features attracting more disadvantaged unemployed (in terms of a lower endowment of human and financial capital) seem not to cause higher net effects and, thus, have no higher program effectiveness. Intense counteracting dead-weight, substitution as well as displacement effects seem to exist and hinder that overall net effectiveness.

In the case of SGBIII-unemployed, the models (18), (19) and (20) of Table 3.4 illustrate that comparatively low (GZ) and middle (EXI) unemployment rates drive the positive and significant direct employment effects. For the high unemployment situation, no significant and direct employment effect can be found. It is likely, anyways that the existing push effect into self-employment out of unemployment causes strong dead-weight effects that counteract the positive employment effects by the start-up subsidy. Anyhow, the start-up subsidy is not appropriate to cause additional outflows from unemployment in unfavorable eco-

[49] The regression is not implemented with quartiles depending on the separately SGBII-unemployment and SGBIII-unemployment situation within a region as a significant loss of heterogeneity go along with this approach.

nomic conditions, regardless of the individual characteristics (human and financial endowment) of the owner. All in all, also the evidence for prosperity-pull hypothesis of an (indirect) employment boost from start-up support in better economic situations is mixed. The significance and direction of the elasticity is to some extent ambiguous, which is why no significant employment effects by the supported start-ups should be expected, at least in the short-term.

Table 3.4: Matching proceeding on the labor market – augmented model with separation for groups of unemployed persons and unemployment rates

	SGBII-Model Lower endowment			SGBIII-Model Higher endowment		
Dependent Variable	ln Outflow from Unempl. (SGBII)			ln Outflow from Unempl. (SGBIII)		
Unemployment Rate	Low ($< Q1$)	Middle ($\geq Q1 \cap < Q3$)	High ($\geq Q3$)	(Low) ($< Q1$)	Middle ($\geq Q1 \cap < Q3$)	High ($\geq Q3$)
	(15)	(16)	(17)	(18)	(19)	(20)
ln Stock of Unempl. (SGBII) (t-1)	0.505***	0.825***	0.761***			
	(0.179)	(0.116)	(0.181)			
ln Stock of Unempl. (SGBIII) (t-1)				0.940***	0.734***	0.628***
				(0.122)	(0.062)	(0.086)
ln Stock of Vacancies (t-1)	−0.102	0.100***	0.194***	0.030	0.015	0.020
	(0.097)	(0.036)	(0.045)	(0.059)	(0.021)	(0.027)
ln Inflow into Unempl. (SGBII)	0.525***	0.251***	0.331***			
	(0.074)	(0.048)	(0.062)			
ln Inflow into Unempl. (SGBIII)				0.101	−0.026	−0.075
				(0.087)	(0.042)	(0.057)
ln Inflow into Vacancies	0.109*	0.085***	0.096***	0.123***	0.087***	0.046**
	(0.056)	(0.028)	(0.034)	(0.036)	(0.017)	(0.021)
ln Spatial lagged Outflow (SGBII)	0.108	0.340***	−0.036			
	(0.093)	(0.050)	(0.091)			
ln Spatial lagged Outflow (SGBIII)				0.623***	0.707***	0.680***
				(0.111)	(0.063)	(0.073)
Share of long-term Unempl. (SGBII, t-1)	−0.941**	−0.647***	−0.370			
	(0.423)	(0.206)	(0.295)			
Share of long-term Unempl. (SGBIII, t-1)				−0.955**	−0.571***	−0.643***
				(0.453)	(0.215)	(0.231)
ln Stock of EXI(SGBII, t-1)	0.005	0.002	−0.005			
	(0.008)	(0.004)	(0.005)			
ln Inflow into EXI (SGBII)	−0.001	0.001	−0.001			
	(0.002)	(0.002)	(0.003)			
ln Stock of EXI(SGBIII, t-1)				0.000	0.001	0.001
				(0.002)	(0.001)	(0.002)
ln Stock of GZ (SGBIII, t-1)				−0.010	0.032*	0.008
				(0.019)	(0.019)	(0.030)
ln Inflow into EXI (SGBIII)				0.003	0.003***	−0.001
				(0.002)	(0.001)	(0.002)
ln Inflow into GZ (SGBIII)				0.005*	0.002	0.001
				(0.003)	(0.002)	(0.004)
Constant	−2.380	−5.776***	−4.902***	−6.823***	−5.065***	−3.305***
	(1.999)	(1.128)	(1.829)	(1.336)	(0.671)	(0.973)
Observations	512	1031	551	534	1100	556
LR chi2	44,168.2	8,823.4	347,317.3	132,082.7	11,348.7	6,798.0
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000
R2	0.966	0.979	0.977	0.993	0.988	0.993

Notes: Prais–Winsten Regression with panel corrected standard errors. Robust standard errors in parentheses. Time (month and year) and regional fixed effects included. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.6 Conclusion and implications for public policy

In this paper we analyze the question of whether ALMP in kind of grants to start-ups by the unemployed help to reduce unemployment from a regional perspective. For this purpose, we make extensive use of comprehensive data sets on the stock and flows of unemployed, vacancies and participants of two distinctive start-up subsidies. An understanding of macroeconomic effects of these ALMP is important, as these measures not only cause direct employment effects, but also can cause positive as well negative externalities on non-participants. The largely positive results of the individual participant studies are generally not confirmed by this study in the broader context and in the short-term.

The results particularly indicate that policy makers face a delicate balancing act: From a regional labor market perspective, ALMP through start-up subsidies are very limited in terms of job creation effects, especially for the group of unemployed with a lower endowment of financial and human capital. However, ALMP programs are typically implemented specifically for this group. Further, in the context of the Recession-Push Hypothesis, it is found that in times of comparatively high unemployment rates, the provision of start-up subsidies does not cause additional outflows from the stock of unemployed persons into employment. Independent of the unemployment situation, indirect employment effects on the labor market by start-up subsidies are ambiguous and should not be expected. It remains the task of other studies to review these results for other regions and different economic situations. This is especially true against the background of the special case of the German and Thuringian labor markets and their unique, positive development. The external validity of the results is therefore restricted.

Based on the results of this study, the financial support of start-ups by unemployed persons appears questionable. For the purpose of higher net effects, it is reasonable to recommend that these kind of ALMP measures should be more targeted and focus more on the concrete circumstances of founders, business' industries and the labor market. To avoid dead-weight losses, the focus should be put more on the supported individual with its specific characteristics. Even if there are social reasons for supporting the unemployed, there should be evidence of real financial disadvantage in order to protect state budgets.

It is also important to ask whether setting up a company is indeed the most efficient way of ending unemployment. A large proportion of the unemployed receiving support had a high level of education compared to the total number of unemployed persons. This human capital endowment may be positive for the company's prospects of success, but given the current economic situation and the existing jobs in the area of study, an unsupported dependent employment could have been a realistic possibility. Further, to avoid displacement effects, a special focus could be given to the supported business' industries. As noticed by Shane (2009), founders are typically starting-up in sectors where entry is comparatively easy but not where success rates are high. It would therefore be advisable to look at the specific cutthroat competitive situation in the market. Whether or not the additional supply by the start-ups finds additional demand is of great interest to avoid a "revolving door" mechanism (Santarelli and Vivarelli, 2007) and to increase net employment effects.

Chapter 4

What Do We Really Know about Start-Up Incentives for Unemployed Persons? A Critical Discussion

"*A player appears before the curtain and addresses the audience apologetically in an epilogue:*
THE PLAYER:
Ladies and gentlemen, don't feel let down:
We know this ending makes some people frown.
We had in mind a sort of golden myth
Then found the finish had been tampered with.
Indeed it is a curios way of coping:
To close the play, leaving the issue open."

— Brecht (2016, p. 185)

Abstract. This survey article critically reviews the recent evaluation literature on start-up incentives for the unemployed. The main conclusion is that the existing literature has not yet been able to link the outcomes studied with the institutional framework conditions of the respective policies. In particular, too little attention has been paid to the description of the different institutional frameworks (policy objectives, beneficiaries, eligibility criteria, type and amount of support) and the economic circumstances including market failures. Yet, this focus is of crucial importance in the context of measuring success, comparing the results and giving appropriate policy advice. An analytical framework is being developed that makes the different instruments more comparable. As a result, a series of open research questions is identified that need to be clarified in order to adequately assess and justify the use of

start-up incentives for the unemployed.[50]

4.1 Introduction

One of the currently most discussed and implemented instruments to reduce unemployment are start-up subsidies for the unemployed (OECD and European Commission, 2014; Eurofound, 2016). In OECD, 2017 countries, between the years 2006 and 2015, more than 45 billion EUR were spent on this policy. However, start-up incentives for the unemployed can be both, an active labor market policy (ALMP) and an entrepreneurship policy. Given that one of the most basic issues for policymakers are jobs (Dennis Jr., 2011), these policies are very attractive as they *directly* end the period of unemployment through the foundation of their own company by that unemployed person (Román et al., 2013; Caliendo, 2016). In addition to that, possible *indirect* employment creation through the growth of the newly founded business may emerge (Caliendo and Kritikos, 2010). Although the existing literature predominantly shows positive results with regard to the effectiveness of start-up incentives for unemployed persons (see e.g. Caliendo, 2016, Dvouletỳ and Lukeš, 2016), there are also studies that do not clearly confirm the effectiveness of these measures (see e.g. O'Leary, 1999; Meager et al., 2003a,b; Cueto et al., 2017).

Given the limited public finances, such policies should, thus, be regularly examined empirically for their effectiveness as political decision-makers are increasingly demanding an evidence-based policy advice to

[50] JEL-Classification: J64; P48; J08, M13; L53; D78. Keywords: Regional Policy; Start-Up Subsidy; Unemployment; Entrepreneurship.

support and inform their actions (Sanderson, 2002). It is then the responsibility of researchers to formulate clear policy recommendations as a result of the policy evaluation process. However, up to now, most of the existing literature on start-up incentives for unemployed persons has investigated the question of how the funding instrument affects outcomes of the participants or established companies, while policy advice to improve the effectiveness is scarce.

In this paper, we argue that the evaluation of specific instruments without reference to external validity is too general to adequately assess and justify the use of start-up incentives for the unemployed. Rather, it is important to describe both the support measures as well as the context in which they have been implemented as the effectiveness of a measure depends to a large extent on these factors (see e.g. Wilson and Adams, 1994; Meager, 1996; Cueto et al., 2017). Since differently structured start-up incentives for unemployed persons in various regions or countries exist, only in this way the different studies on these measures can be compared in terms of the external validity of their results. For this purpose, we introduce a uniform institutional and contextual framework that makes the different instruments analyzed in the literature so far more comparable. With this, the framework can serve as a basis for more evidence-based policy advice. We do so based on 19 instruments from 13 different countries, bringing together a total of 27 studies on start-up incentives for unemployed persons.

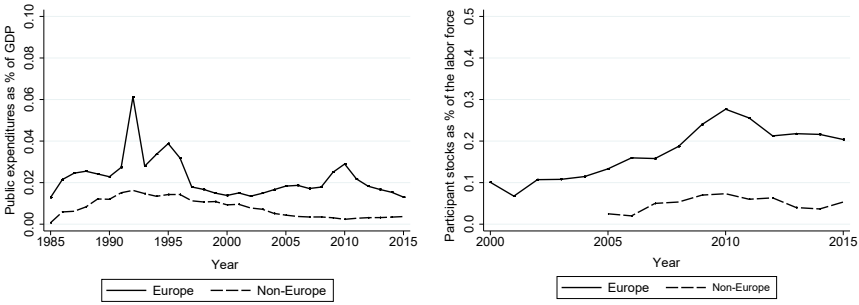
The framework developed here addresses four main issues: First, evaluation studies of start-up incentives for unemployed persons are focused on supposedly "positive" outcomes such as survival rate, employability, job creation or business growth among others. Important negative effects, i.e. displacement effects and dead-weight losses have so far been insufficiently investigated. Second, as the fact that start-up incen-

tives are both an ALMP and entrepreneurship policies creates conflicts between the two policy areas, a clearer focus of political objectives by policy makers is often required. Moreover, the present literature does not sufficiently consider how the measures perform in respect of the stated objectives nor consequently discusses the economic circumstances at the time of the introduction of the policy, even though this is a prerequisite for effective, evidence-based policy making. Third, start-up incentives for unemployed persons require more verifiable economic justification by identifying market failures. Credit constraints for unemployed persons in the context of capital market imperfections are not be proven yet. Fourth, due to the lack of clarification of these fundamental issues, it is not yet possible to identify best practices with regard to the institutional framework and, most important, link the outcomes studied with the institutional framework conditions of the respective policies. The analysis of different policy frameworks and the critical discussion of the literature gives rise to a number of open research questions that need to be clarified to broaden and solidify evidence-based policy advice on the topic of start-up incentives for unemployed persons.

This article is organized as follows. The upcoming Section 4.2 provides a descriptive overview of start-up incentives for unemployed persons in the international context. This quantitative analysis is followed by a qualitative assessment of the measures. Section 4.3 then gives a brief overview of the existing literature on this topic and the selection of the examined studies in this paper. The subsequent discussion of these empirical studies in Section 4.4 is divided into five subsections, i.e. policy perspective, eligibility criteria, type and level of financial support and supplementary services, which together form the analytical framework developed. Section 4.5 concludes.

4.2 Descriptive data

Within the OECD, start-up incentives for the unemployed are a political instrument whose application is concentrated within the European countries. According to data reported by OECD (2017), one can see in Figure 4.1a that since 1985 the average of public expenditure on these measures as a percentage of GDP were in the European Countries at all times higher than outside Europe. This applies equally to participant stocks as a percentage of the labor force (Figure 4.1b).



(a) Public expenditures **(b)** Participant stocks

Figure 4.1: Public expenditures and participant stocks of start-up incentives for unemployed persons

Notes: In Figure 4.1a, the average public expenditure on start-up incentives for unemployed persons as a percentage of GDP in the years 1985 to 2015 are illustrated. In Figure 4.1b, the average participant stocks as a percentage of the labor force in the years 2000 to 2015 are illustrated.
Source: OECD (2017).

It can be seen that after the end of the Cold War in 1991 and the subsequent transformation processes in Eastern Europe there has been a first substantial increase in expenditures relative to GDP. After a phase of expenditure consolidation between the mid-1990s and mid-2000s in all countries, interest in these measures has picked up again

at the latest since the economic and financial crisis in the year 2007. Since then, both expenditure as a share of GDP (only in Europe) and the number of participants (in Europe and Non-Europe) have risen significantly.

However, these general trends do not explain the observable differences between countries, nor the fluctuations in expenditure and numbers of participants within individual countries, which can be seen in Figure 4.2. For example, countries like Spain, Poland, Slovakia, France and Germany are particularly committed to providing these measures. This leads to the fact, that the number of participants are of particular importance for the general entrepreneurial process as, for example, the share of business owners who had no employment prior to start-up and received a start-up subsidy was in France (1998) 52% (Duhautois et al., 2015) or in Germany (2006 to 2011) 40% to 60% (Caliendo et al., 2015). Even if basic explanatory models to explain the fluctuations within countries and in international comparison are missing, we know from Germany, for example, that in the course of the labor market reforms at the beginning of the 2000s this occurred as a reaction to the increased unemployment rate and this led to a strong increase in the number of participants (Caliendo and Kritikos, 2010). When the unemployment rates then fell again, various reforms of the instruments (see e.g. Caliendo et al., 2015; Bellmann et al., 2017) took place, resulting in a disproportionate decline in the number of participants and expenditure. Other countries such as France and the UK have also carried out various revisions of their funding instruments in recent years (Haas and Vogel, 2016). This implies that either there is no general best-practice approach for such funding instruments or that the measures has to be constantly adapted to changing economic conditions. However, what can be deduced from Figure 4.3 is that there is a general positive link between the unemployment rate in a country and the

expenditures relative to GDP on start-up incentives for unemployed persons.

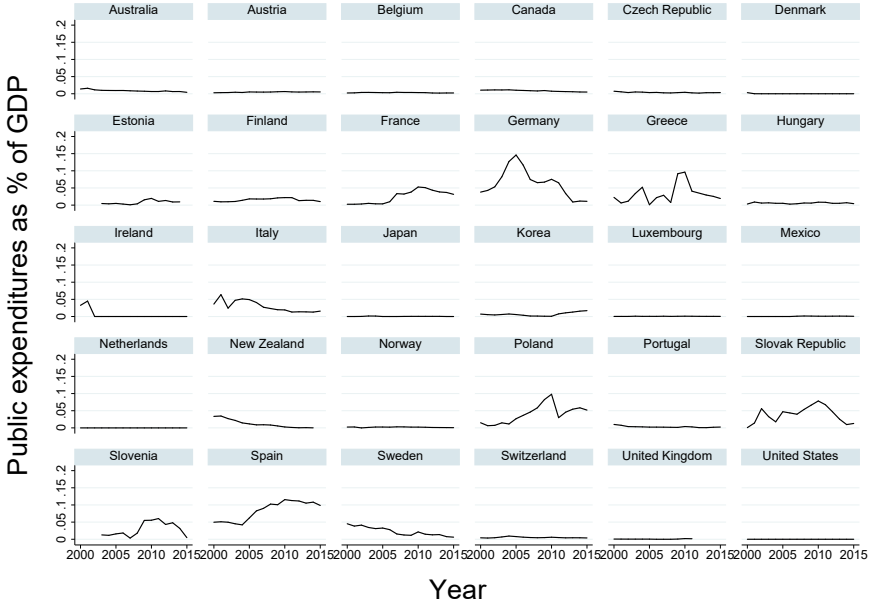


Figure 4.2: Public expenditures on start-up incentives for unemployed persons by country

Notes: In Figure 4.2, the public expenditure on start-up incentives for unemployed persons as a percentage of GDP in the years 2000 to 2015 are illustrated for several countries.
Source: OECD (2017).

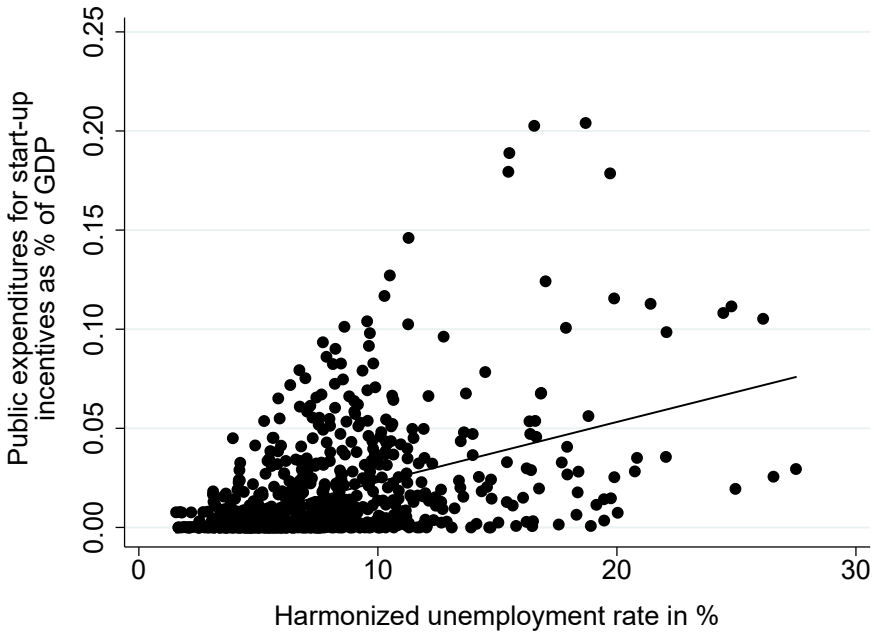


Figure 4.3: Correlation between unemployment rates and public expenditure on start-up incentives for unemployed persons

Notes: In Figure 4.3, the correlation between unemployment rates and public expenditure on start-up incentives for unemployed persons as a percentage of GDP are illustrated.
Source: OECD (2017).

4.3 Literature review and selection of studies

In correspondence to the number of participants and expenditures on start-up incentives for the unemployed, the research on this issue also focuses on Europe, especially Germany. In a recent review of Dvouletỳ and Lukeš (2016), which evaluates 18 empirical studies about self-employment out of unemployment of the last ten years and focuses on the research designs and empirical results used, it is shown that in almost all studies European countries are treated. Of these, ten stud-

ies alone deal exclusively with different German measures to support start-ups out of unemployment. Only one study in the review – a work by Zouhar and Lukes (2015) using data on cross sectional cohorts – covers states outside the European Union. Caliendo (2016) presents a further overview that the latest studies of start-up subsidy programs, which provide descriptive evidence or causal effects and originate from non-European countries, are from Wilson and Adams (1994) for Australia and the USA, Ross et al. (2002) for Australia and Perry (2006) for New Zealand.

In Table 4.1, the studies used for the literature review in this paper are presented. The literature review, focusing on the policies' institutional and contextual framework, is also dominated by European studies. For example, of the 19 examined instruments, a total of 16 are from Europe, which is equivalent to 24 out of 27 in total studies. The selection of articles, and thus the various funding instruments, is essentially based on the result-orientated literature that is also used in Caliendo (2016). In order to ensure that those studies those studies that have been performed since that time are also included, the keyword search approach described in detail by Dvouletỳ and Lukeš (2016) was followed. As a result, four new studies (Bellmann et al., 2017; Cueto et al., 2017 and Chapter 2 and 3 of this thesis) have been identified that have not been included in the previous review articles. The information in the overview of Table 4.1 to 4.7 have been taken with the greatest care from the respective papers and therefore represent the description of the institutional and contextual framework as well as the performance indicators for the specific measures.

Table 4.1: Policy measures by country and related literature

Country	Nr.	Name	Literature	Policy Level
Australia	[1a]	New Enterprise Incentive Scheme (1990)	Wilson and Adams (1994)	Federal
	[1b]	New Enterprise Incentive Scheme (2000–2002)	Ross et al. (2002)	
Denmark	[2]	Ivaeksaenterydelsen (1992)	Meager (1996)	Federal
Finland	[3]	Start-Up (1988–2002)	Tokila (2009)	Federal
France	[4a]	ACCRE (1986)	Wilson and Adams (1994)	Federal
	[4b]	ACCRE (1988)	Meager (1996)	
	[4c]	ACCRE plus (1998–2006)	Duhautois et al. (2015)	
Germany	[5a]	Bridging Allowance (1991)	Meager (1996)	Federal
	[5b]	Bridging Allowance (1993–1996)	Pfeiffer and Reize (2000)	
	[5c]	Bridging Allowance (2003–2008)	Baumgartner and Caliendo (2008) Caliendo (2009) Caliendo and Kritikos (2010) Caliendo and Künn (2014)	
	[5d]	Start-Up Subsidy (2003–2008)	Caliendo (2009) Caliendo and Kritikos (2010) Caliendo and Künn (2014)	Federal
	[5e]	New Start-Up Subsidy (2009–2011)	Caliendo et al. (2015) Caliendo et al. (2016)	Federal
	[5f]	New Start-Up Subsidy (2011–2014)	Bellmann et al. (2017)	Federal
	[5g]	Einstiegsgeld (2005–2007)	Wolff et al. (2016)	Federal
	[5h]	Existenzgründerrichtlinie (2007-2014)	Section 2, Section 3 in this thesis	Regional
Hungary	[6]	Self-Employment Assistance (1995–1997)	O'Leary (1999)	Federal
New Zealand	[7]	Enterprise Allowance (1988–1997)	Perry (2006)	Federal
Poland	[8]	Self-Employment Assistance (1993–1997)	O'Leary (1999)	Federal
Romania	[9]	Self-Employment Assistance (1999–2002)	Rodríguez-Planas (2010) Rodríguez-Planas and Jacob (2010)	Federal
Spain	[10a]	Self-Employment, pp. 1996-2000	Cueto and Mato (2006)	Regional
	[10b]	Flat rate for young self-employed workers (2013)	Cueto et al. (2017)	Federal
Sweden	[11a]	Self-Employment, 1998–2002	Andersson and Wadensjö (2007)	Federal
	[11b]	Self-Employment, 2003–2007	Månsson and Delander (2011) Behrenz et al. (2012)	
UK	[12a]	The Business Start-Up Scheme (1991)	Wilson and Adams (1994)	Federal
	[12b]	The Business Start-Up Scheme (1992-1994)	Meager (1996)	
	[12c]	Prince's Trust (1998–2001)	Meager et al. (2003a) Meager et al. (2003b)	Federal
US	[13]	Self-Employment Assistance (1990)	Wilson and Adams (1994)	Regional

Source: Author's own illustration based on referenced articles.

4.4 Institutional and contextual framework

Literature reviews of entry into self-employment are of great importance. They help to provide a solid background for the definition of more focused and efficient policy measures (Simoes et al., 2016, p. 799).

The development of a comparative analytical and institutional framework for start-up incentives for unemployed persons is, thus, of critical importance, since the outcomes of the policies in various countries differ (Caliendo, 2016; Dvouletỳ and Lukeš, 2016) and are determined to a large extent by how the measure is designed in concrete terms, for example with regard to different target groups, funding amounts, types of funding or funding conditions (see e.g. Meager, 1996, Cueto et al., 2017).

The provision of an analytical framework on this topic is a continuation of the early survey work of Wilson and Adams (1994) but also Meager (1996). The above mentioned authors' comparative studies of selected OECD countries and transitional economies, which corresponds with the first increase in expenditures and numbers of participants at the beginning of the 1990s (see Section 4.2), consist of two parts: First, a description of different policy designs in the respective countries and, second, a presentation of outcome-variables (survival rates, dead-weight effects, job creation). While the latter has been recently analyzed and extended through literature reviews by Caliendo (2016) and Dvouletỳ and Lukeš (2016), the former has been given less attention. Since that early work, only Haas and Vogel (2016) published a comparative institutional analysis of recent policy designs based on interviews with selected administrators from different European countries.

This paper tries to fill the existing gap, namely a literature review with a focus on the institutional and contextual framework level. This not only provides information on the various funding instruments and their policy design, but also on the state of the research in the field. In the following, it will be shown that there is a significant heterogeneity of the measures with regard to their policy design, that is, there is no best practice approach to date. Interestingly, the main part of the current

studies refer to measures taken before the financial and economic crisis of 2007 and subsequent years. However, it is precisely during this period that a significant increase in unemployment has been observed, which is why the call for adequate policy measures has been intensified and start-up measures became the subject of this discussion (OECD and European Commission, 2014; Eurofound, 2016, see also Section 4.2). Due to considerable time delays, research has so far insufficiently described current problems and challenges.

4.4.1 Policy perspective

In order to ensure adequate policy-making and evaluation, it is at first of crucial importance to define the objectives of a specific measure. Obviously, from a purely economic point of view, this would imply particularly the identification and removal of market failure. However, we know from policy research (Battilana et al., 2009; Acemoglu and Robinson, 2013; Arshed et al., 2014) that policy measures do not necessarily pursue economic efficiency, but may also be influenced by elected politicians, civil servants and especially external stakeholders, which pursue their own agendas and try to satisfy the needs of particular interest groups. The formulated policy objective is thus a result of a negotiation process and therefore represents a political equilibrium, which can be used as an object of investigation.

In the case of start-up incentives for unemployed persons, the formulation and analysis of policy objectives can be challenging as different policy areas are affected. Román et al. (2013, p. 171)therefore provocatively asks the question: "Are start-up incentives an entrepreneurship policy or an instrument within ALMP?". It depends on the answer to that question which indicators should be used to assess the effectiveness of the policy measure from a political and economic perspective.

4.4.1.1 Policy objectives and justification of market interventions

If the design of start-ups incentives for unemployed persons is intended to be an entrepreneurship policy, this is linked to a focus on growth orientation, i.e. regional development and the creation of additional jobs. Typical policy objectives (see Table 4.2) and the resulting measures of success (see Tables 4.3 and 4.4) would be the survival rate of the supported business owners (for example defined in the Swedish (Månsson and Delander, 2011; Behrenz et al., 2012) or Spanish (Cueto and Mato, 2006) Self-Employment Grants) or the number of their newly created jobs (for example defined as the goal of the German Bridging Allowance (see e.g. Baumgartner and Caliendo, 2008, Caliendo and Kritikos, 2010). But also an increase in the self-employment rate of the region is a conceivable goal, for example as aimed as by the Spanish flat rate for young self-employed workers (Cueto et al., 2017).[51]

[51] In this context, it is stated by Meager (1996) that broader objectives exist, which are essentially ideological, for example the extension of an "enterprise culture". The increase in the self-employment rate may, thus, target towards experiences in self-employment to encourage a more positive attitude towards entrepreneurship. This may be particularly important for groups that typically experience only wage employment.

Table 4.2: Policy objectives by country and measure

Country	Nr.	Policy Perspective	
		Policy Objective	Economic Context
Australia	[1a] [1b]	Help participants become self supporting[*]; independence from social security payments[ ]	
Denmark	[2]		
Finland	[3]	General statements on lack of finance[ ] and increase in entrepreneurship[*]	Average annual unemployment rate between 12% and 16%, regions are more urban (75%) than rural (25%)
France	[4a] [4b]		
	[4c]	Secure income [*]; provide social security[ ]; advantageous for participants[ ]	
Germany	[5a]	Integrate participants into labor market (ideally long term)[*]; create additional jobs[*]; spur growth[*]; cover basic costs of living and social security contributions[ ]	
	[5b]		General information on numbers of unemployed and self-employed persons
	[5c]		Comprehensive information and international context; in Germany comparatively low self-employment rate (10 to 11%); medium unemployment rates (7.3%)
	[5d]	Integrate participants into labor market[*]; secure early self-employment[*]; provide social security[ ]	
	[5e]		
	[5f]	Reintegrate participants into labor market[*]; maintaining livelihood[*]	Unemployment rate (6.4%-6.8%) and GDP growth (0.3%-1.5%) reported
	[5g]	End the participants' welfare receipt[*]	Decrease in unemployment rates since labor market reforms of the years 2003-2005
	[5h]	Support growth-oriented start-ups[ ]; reduce regional unemployment rate[*]; integrate unemployed into the labor market[ ]; increase regional self-employment rate	Favorable development in unemployment rates (drop from 13.1% to 7.8%) decline in self-employment rates
Hungary	[6]	General statements on reemployment[ ]	Increase in GDP and unemployment rates (up to 13%) in last 7 years
New Zealand	[7]		
Poland	[8]	General statements on reemployment[ ]	increase in GDP and unemployment rates (up to 16%) in last 7 years
Romania	[9]	Reintegration of displaced workers[*]	underdeveloped SME sector, high share of agriculture businesses, high unemployment rate (more than 10%), low share of self-employment
Spain	[10a]	Reduce unemployment[ ]; inequality[ ]; business failures[ ]	
	[10b]	Foster self-employment[ ]; facilitate survival of young self-employed workers[*]	Unemployment rate and (youth) self-employment rate high (compared to EU average)
Sweden	[11a]		
	[11b]	Decrease unemployment[*]; stimulate employment in small businesses[ ]	
UK	[12a] [12b]		
	[12c]	Help participants to get work[ ]; support to start-ups[ ]	
US	[13]		

Notes: Author's own illustration based on referenced articles (Table 4.1). Policy objectives of a measure that have actually been evaluated are marked with an [*].

Table 4.3: Descriptive policy outcomes by country and measure

Country	Nr.	Performance – descriptive results				
		Survival (% in self-employment)	Employment (% self-employed or employed)	Job creation (% of start-ups with employees and no. of jobs created	Dead weight losses	Displacement
Australia	[1a]	54% (1 year after T)	63% (1 year after T)	22% (1 year after T); 0.36 FTE jobs per survivor	39%	
	[1b]	56% (2 years after T)	84% (2 years after T)	0.45 FTE jobs per survivor (2 years after T)		
Denmark	[2]	74% (2 years after S); 55% (3.5 years after S);		36 extra jobs per 100 participants (2 years after S)	41%	Likely high
Finland	[3]	79% (1 year after S); 52% (4 years after S); 36% (8 year after S)				
France	[4a]	51% (4.5 years after T)		29% (4.5 years after T); 0.45 jobs per survivor	60%	
	[4b]	53% (3 years after S)		97 extra jobs per 100 participants (5 years after S)	35%	Likely low
	[4c]	56.9% (5 years after S); 45.3% (8 years after S)				
Germany	[5a]				20%	Likely low
	[5b]	90% (West) and 94% (East) (1 year after S)		14%–19% mean annual employment growth rate (1 year after S)		
	[5c]	72% (2 years after S); 68% (4.5 years after S)	86% (2 years after S); 89% (4.5 years after S)			
	[5d]	68% (2 years after S); 60% (4.5 years after S)	80% (2 years after S); 81% (4.5 years after S)			
	[5e]					
	[5f]	87% (female 18 months after S) 94% (male 18 months after S)				
	[5g]					
	[5h]	96%–97% (male 1 year after S) 95%-97% (female 1 year after S)		4 extra jobs per 100 participants (at time of S)	Likely high	
Hungary	[6]	81% (1.5 years after T)		17% (2 years after T); 0.3 jobs per survivor		
New Zealand	[7]					
Poland	[8]	62% (4 years after S)		27% (3.5 years after S); 0.84 jobs per survivor		
Romania	[9]		60% employed (for at least 1 out of 2 years after S)			
Spain	[10a]	93% (2 years after S); 76% (6 years after S)				
	[10b]	50% (1 year after S) 40% (2 years after S)				
Sweden	[11a]					
	[11b]				30–45%	insignificant
UK	[12a]	71% (0.5 years after T)	81% (0.5 years after T)	18% (1.5 years after S); 0.28 FTE jobs per survivor (0.5 years after T)	42%	
	[12b]	87% (1 year after S); 59% (3 years after S); 40% (5 years after S)		35 extra jobs per 100 participants (5 years after S)	50–70%	High >50%
	[12c]	75% (1.5 years after S); 50% (4 years after S)				
US	[13]	77% (1 year after T)	80% (1 year after T)			

Source: Author's own illustration based on the results presented in Caliendo (2016), supplemented by referenced articles (Table 4.1). After T is the time passed since the end of period of support (treatment). After S is the time passed since start-up. FTE are full time equivalent jobs.

Table 4.4: Policy outcomes and causal effects by country and measure

Country	Nr.	Policy Outcomes (percentage point change)			
		Self-employment	Self-employment and employment	Income growth	Business growth
Australia	[1a]				
	[1b]				
Denmark	[2]				
Finland	[3]	+4pp (4 years after S)			
France	[4a]				
	[4b]				
	[4c]	0pp (2 years after S); +3.5/4.5/4.7pp (4/6/8 years after S)		0pp, effect on turnover/ employment growth rate	
Germany	[5a]				
	[5b]	East: -6.4pp (1 year after S); West: 0pp			0pp, effect on employment growth rate
	[5c]		+14.5pp (4.5 years after S)	+618 EUR per month (4.5 years after S)	
	[5d]		+22pp (4.5 years after S)	+435 EUR per month (4.5 years after S)	
	[5e]				
	[5f]		+30pp (female 18 months after S) +26pp (male 18 months after S)	+530 EUR (female 18 months after S) 950 EUR (male 18 months after S)	
	[5g]		-26–31pp less likely to be unemployed; 13–17pp less likely to receive welfare (2 years after S)		
	[5h]		0.003pp more employed per 1pp increased participant number for benefit recipients Social Code III (at time of S) +/- 0pp for benefit recipients Social Code II or non-recipients (at time of S)		
Hungary	[6]		0 (2 years after T)	-$26 per month (2 years after T)	
New Zealand	[7]		-100/-32 days in unemployment (6 months after T)		
Poland	[8]		+27pp (after 5 years after S)		
Romania	[9]		+8pp (for at least 0.5 years out of 1 after S)		
Spain	[10a]				
	[10b]	+/- 0 (2 years after S)	+/- 0 (2 years after S)		
Sweden	[11a]	+8pp (3 years after S)		+27%/19% (1/3 year after S)	
	[11b]		17pp/10pp less likely to be UE (2/5 years after S)		
UK	[12a]				
	[12b]				
	[12c]		+/- 0pp (4 years after S)	+/- 0pp (4 years after S)	
US	[13]				

Source: Author's own illustration based on the results presented in Caliendo (2016), supplemented by referenced articles (Table 4.1). After T is the time passed since the end of period of support (treatment). After S is the time passed since start-up. FTE are full time equivalent jobs.

On the other hand, there is the ALMP perspective for these measures, which aims at reducing unemployment. These policies target the individual and its further prospects and development on the labor market, i.e. its employability and income prospects (see e.g. Caliendo and Künn, 2011). In concrete terms, an ALMP can be considered as successful if the supported individual's probability of being unemployed in the future is reduced. Be it directly by maintaining their self-employment status, or indirectly by gaining work experience through the establishment and closure of the company. The latter can be in conflict with the entrepreneurial perspective, since low survival rates are not necessarily associated with a lack of program efficiency as experiences gained may increase the individual's human capital and, thus, the chance to return to regular employment (Månsson and Delander, 2011). This means that a focus is set on the employment chances after a certain period. In addition, the individuals' dependence on state transfer payments can be an important policy dimension. As an example, both, the "Start-Up Subsidy" (Caliendo and Kritikos, 2010, Caliendo and Künn, 2014) in Germany and the French "L'aide aux chômeurs créateurs ou repreneurs d'entreprise" (ACCRE) system (see e.g. Duhautois et al., 2015), aimed at providing income and social security to formerly unemployed persons while starting up. An effective instrument would therefore encompass the maintenance of the standard of living for an individual or the provision of a certain degree of social security, i.e. the maintenance of entitlements to health, pension or unemployment insurance. However, this conflicts with the entrepreneurship approach, which is focused on the growth of the company. This means that people should be supported in taking entrepreneurial risks in order to generate profits and not to provide social security. In many countries, self-employed persons are excluded from state social benefits and must fall back on private insurance or do not have any entitlement,

e.g. unemployment insurance (Caliendo and Kritikos, 2010; Haas and Vogel, 2016).

Even if all mentioned outcomes (survival rate, employability, job creation, change in self-employment rates, business growth, income changes, social security or other) of start-up incentives can be evaluated independently of the original policy objectives, there is a crucial value in analyzing it:[52] Because, adequate evidence-based policy advice, given by researchers, is able to link political objectives by policy makers with expected outcomes. To say whether the measure was *effective from the intended political will* is, thus, an interesting and demanded conclusion for politicians in particular, as political decision-makers are increasingly demanding this evidence-based policy advice to support and inform their actions (Sanderson, 2002). The necessary consideration of intended objectives would also be in line with the argument put forward by Dixit (1997) and Acemoglu and Robinson (2013) that economic analysis and policy advice should not just focus on the economic costs and benefits or the removal of market failures (see Section 4.4.1.2). Moreover, it should consider the policy making process. The funding instrument and its objective are now the very outcome of this policy making process. That is, if possible, scholars may take more into account the originally intended objective of the start-up incentives for the purpose of comprehensive evaluation.

Until now (see Tables 4.2, 4.3 and 4.4), the measures of success in international comparative studies have been used without placing them consequently in this context, as the outcomes evaluated and the intended political aims often differ or are not reported in the literature. However, this also places demands on policy makers, as Meager (1996,

[52] For sure, in the case of an unclear definition of the objectives or a unquantifiable target this broad evaluation is a standalone, reasonable approach by researchers (Eurofound, 2016).

p. 495) noticed: “a clear articulation of objectives is a prerequisite of the evaluation process, particularly when such schemes may have multiple (and occasionally conflicting) objectives, which need to be taken into account in assessing impact”.

4.4.1.2 Economic context

An increased focus on political objectives, however, does not render the “pure” economic analysis obsolete. On the contrary, it is still of great importance if it is done appropriately. At first, it is therefore surprising that a large number of studies (see Table 4.2) do not explain the economic circumstances that exist in the relevant geographical unit at the time of the analysis of the respective measure. In the case of start-up incentives for unemployed persons, this particularly would mean that the unemployment rate is of crucial importance (Cueto and Mato, 2006; Tokila, 2009), but also the development of the GDP in recent years, self-employment rates or local sector analysis on competition. Since an effective policy design should take regional circumstances into account (Szerb et al., 2013; Stam and Bosma, 2015), this information would be of great value for comparative research.

In addition, Ehrenberg and Smith (2016) remind us of the need to justify state interventions in the labor market, as in the case of the existence of market failures. Even if a focus on a pure economic perspective has been described as maybe too one-dimensional from a policy perspective, economists are, however, responsible for identifying market failures and incorporating them in their policy advice as well as in the evaluation of policy measures. In this paper it is not so much the justification of state intervention in the labor market as such that is to

be discussed,[53] but rather the concrete justification for the application of start-up incentives for unemployed persons. From an economic point of view, subsidies should be dependent on an obvious and unambiguous market failure, because otherwise negative distortion effects are to be expected on efficient, existing firms and, thus, on other self-employed and dependent employed persons (see e.g. Santarelli and Vivarelli, 2007). This, in turn, can have repercussions on the overall economic context.

(i) Lack of Financial Resources: The most important and frequently cited justification for the instrument of self-employment incentives (see e.g. Hinz and Jungbauer-Gans, 1999; Tokila, 2009; Román et al., 2013; Caliendo et al., 2015; Wolff et al., 2016; Cueto et al., 2017 and others) relates to a lack of financial endowment of the unemployed in addition to a discrimination by the credit market.[54] It is assumed that significant *credit constraints* exist for unemployed persons, as it is found in the literature that credit markets tend to discriminate against socio-economic groups (for example women or migrants see e.g. Blanchflower and Oswald, 1998; Blanchflower, 2009; Bruder et al., 2011). This statement is based on two assumptions and relates to policy objectives regarding the financial help to participants to become self-employed (see Table 4.2) .

[53] Examples are the fail of markets to provide insurance against unemployment (Boeri and Van Ours, 2013), imperfect information on job opportunities or self-employment prospects ("lack-of-awareness") which leads to suboptimal job decisions (Storey, 2003) or the existing externalities on schooling (Ehrenberg and Smith, 2016).

[54] Other reasons of minor interest, which are a disadvantage of unemployed persons compared to normal business founders, but which do not necessarily constitute a market failure, are that unemployed people may lack in terms of their endowment of human capital, as this continuously decreases with an ongoing period of unemployment and the, thus, missing working experience and their underdeveloped social business networks (e.g. Hinz and Jungbauer-Gans, 1999; Pfeiffer and Reize, 2000; Caliendo et al., 2015).

Firstly, the provision of financial resources is essential for the establishment of a company as decisions for or against certain investments depend on it and an individual's livelihoods must be guaranteed. Overcoming liquidity problems and providing a certain degree of necessary capital, thus, positively influences the survival of the company, as more opportunities are offered and financial security during the start-up phase is provided (Evans and Jovanovic, 1989; Blanchflower and Oswald, 1998; Berge et al., 2014). Secondly, due to their status as unemployed persons compared to non-unemployed, they are expected to have less financial resources at their disposal, which is why external sources are needed. That is, their personal income and wealth situation is comparatively lower than that of the average founder, as unemployed persons depend on savings or limited state transfers, which are by design lower than achievable work income. In addition, family members are more often not available as a source of finance as they more frequently face the same capital constraints or are financially dependent on the unemployment benefit recipient (Caliendo et al., 2015). As a result, more often external capital has to be acquired. The state is then responding to the lack of access to capital by providing start-up support.

The unfortunate problem is that to date there is not enough empirical evidence that the lack of external financial capital actually hinders, in particular, the prospects for an unemployed person to start their own business. The most recent study discussing this topic relates to Caliendo et al. (2015), who found only "suggestive evidence" [p. 176] that unemployed persons were unable to receive credits by banks, as 16% of the subsidized and formerly unemployed business founders reported that they wanted but had no loan contract with a bank, while this was only true for 10% of the regular business start-ups in their questionnaire. However, it has not been asked if they really applied for

a loan contract. As a result, comprehensive studies with comparative groups and a calculation of the loans offered or denied are still lacking. In the meantime, there are good reasons to believe that there is not an (extensive) discrimination by the capital market, but rather that the supposed market failure is just a reaction of banks to the lack of collateral and characteristics offered by the unemployed persons and their poorer prospects of success. Also self-selection mechanisms, justified or not, or general risk attitudes are conceivable to prevent an unemployed person from taking out loans (for a general discussion without explicit reference to unemployment see e.g. Cressy, 2000; Sena et al., 2012). This means that the causal relationships are sufficiently indeterminate and, thus, the economic justification of the incentives, which is why further research is needed to provide reasons for the wide-ranging use of these measures.

Another aspect regarding the topic of financial resources is that unemployment is discussed as a push factor into self-employment (see Chapter 5). A lack of alternatives in the paid employment sector may make them self-employed out of necessity (Moore and Mueller, 2002; Thurik et al., 2008). The extent to which additional incentives are actually needed for this transition of employment status has not yet been clarified. A relevant question to get closer to this topic is which persons are insensitive to these incentives; or in other words: What is the proportion of unemployed people who would have founded a company without the start-up incentive in order to end their unemployment? As shown in the previous literature on this topic, these dead-weight losses are by no means negligible (see Table 4.3). In earlier studies, the dead-weight effects ranged between 30% to 60% in selected OECD countries (Wilson and Adams, 1994) and between 20% to 70% for Germany, Denmark, UK and France (Meager, 1996), respectively. More recent values reported for the German "Bridging Allowance" (Caliendo and

Kritikos, 2010) and the "New Start-Up Subsidy" (Caliendo et al., 2015) account to about 50%. Further, the former "Start-Up Subsidy" in Germany showed dead-weight losses of about 35% (Caliendo and Kritikos, 2010). This means that in a bandwidth of one-third to two-thirds of all unemployed persons receiving support, the intended incentive effect could not be proven. This also casts additional doubt on the lack of access to external capital assumed and capital market discrimination. However, for reasons of economic justification and efficiency, it should be a target to keep dead-weight losses as low as possible (Santarelli and Vivarelli, 2007).

The interactions with the policy design are puzzling. Particularly restrictive eligibility criteria or the exclusion of target groups to reduce dead-weight losses are often characterized by higher social costs. For example, in the form of higher administrative efforts through examining these criteria or at the cost of higher failure rates and, thus, more unprofitable investments if particularly disadvantaged unemployed are targeted by the measures (Behrenz et al., 2012; see also Section 4.4.2 for a more detailed discussion). Again, it is increasingly important to devote more attention to this topic with more comprehensive research designs than the surveys of participants initiated so far to determine whether the foundation had taken place in any case or not.[55]

(ii) Externalities: A second important aspect of the justification of start-incentives for unemployed persons concerns expected externalities as the new entrants into markets may create additional jobs, fos-

[55] The proposed introduction of dead-weight losses in a narrower sense by Caliendo et al. (2012) (the subsidization has not affected the success of the business at all in the first six months after start-up) may not be useful and particularly misleading in this context as new businesses act in a utility and profit maximizing environment. Thus, a subsidy, typically in form of a grant without any repayment requirements (see Section 4.4.3), ought to affect business success per se.

ter innovation or enhance regional development (Fritsch and Mueller, 2004; Mueller et al., 2008; Fritsch and Storey, 2014; Caliendo, 2016; Storey, 2016). Since, in addition to ending the unemployment of the supported individual further positive effects are expected from the business founded, this "double dividend" (Caliendo and Kritikos, 2010) is closely linked to the aforementioned political objectives with a focus on entrepreneurship policies (see Table 4.2).

Reasons for the external effects are based to a considerable extent on the observation mentioned above that entrepreneurship is associated with desirable economic outcomes, i.e. job creation. However, this is mainly a result of the selective and heterogeneous groups of high-growth firms (HGF) (Anyadike-Danes et al., 2009; Nightingale and Coad, 2013; Coad et al., 2014; Daunfeldt et al., 2015; Nightingale and Coad, 2016; Bravo-Biosca et al., 2016; Storey, 2016). Although one cannot completely rule out the possibility that start-ups supported by formerly unemployed people will make a contribution to this, but it is at least doubtful and unlikely due to the numerous disadvantages experienced by this group (Shane, 2009; Nightingale and Coad, 2013). Generally, these start-ups are lacking generous financial resources (see Section 4.4.1.2), experience a depreciation of their human capital due to the unemployment situation (Hinz and Jungbauer-Gans, 1999; Pfeiffer and Reize, 2000) and have underdeveloped social and business networks (Niefert, 2010), which are generally prerequisites for particularly successful start-ups (Davidsson and Honig, 2003; Millán et al., 2012). For example; Niefert (2010) finds that formerly unemployed business owners, supported or not, are predominantly single self-employed and, thus, not an employer.

In addition, the increased market entry as an intended result of the support may lead to distortion effects as competition arises between

the new entrants and the current market participants. And because the survival probability of the supported start-ups is increased (Caliendo et al., 2015), unsupported competitors face cost disadvantages and have to possibly withdraw from the market in the midterm (O'Leary, 1999; Meager et al., 2003a). In this case, the start-up incentive would lead to a displacement effect and the intended reduction of unemployment would be jeopardized. This mechanism depends in general on three relevant factors (Mueller et al., 2008; Fritsch and Storey, 2014): (i) the competitive pressure by the new entrants on their competitors, (ii) the reaction of the incumbent firms; and (iii) the general market characteristics as the competitive process may differ between sectors due to the existing demand, legal entry barriers, or the number of competitors.

However, research has actually failed to identify the scope of these effects, partly due to the fact, that not always a description of the economic circumstances at the time of foundation is given (see Table 4.2). In addition, most of the studies deal with federal programs, since only three cases of regional programs have been investigated so far (see Table 4.1). This also provides a basis for further research, as the effectiveness of policies often benefits from considering economic circumstances at the regional level (Szerb et al., 2013; Stam and Bosma, 2015). As a result, "hard empirical evidence is lacking, displacement effects cannot be ruled out" (Caliendo, 2016, p. 9). Comprehensive local labor market studies with sector-specific distinctions are, thus, needed as they seem to be the most likely method to address this

issue.[56]

4.4.2 Eligibility criteria

Given the importance of objective achievement for policy makers and the intended target group, it also has to be defined who is allowed to apply for the support and what other conditions of support must be met by the potential beneficiaries. In connection with the ALMP and entrepreneurship perspective on start-up incentives for the unemployed, it can be seen in Table 4.5 that there are funding conditions which are directed on the one hand at the individual and on the other hand at the new business. In principle, these eligibility conditions can be wide and restrictive, which, in turn, not only influences the number of supported participants but also the scheme performance and thus the effectiveness (Meager, 1996; Haas and Vogel, 2016).

At first, the start-up incentive can be limited to a specific group of (unemployed) persons by defining certain characteristics that have to be fulfilled by the applicants. This reflects the extent to which the guideline provider desires selective access to the program. While most of the countries grant general access to the programs for registered unemployed people or welfare benefit recipients, age particularly is a selection criterion in Sweden (Self-Employment Grants, Månsson and Delander, 2011; Behrenz et al., 2012) and Denmark (Ivaeksaenteryderdelsen, Meager, 1996) with a minimum of 25 years. On the contrary

[56] To our knowledge, the only evidence-based statements are made by Meager (1996) and Behrenz et al. (2012). The former reports for example on an early UK scheme, that the displacement effect in the sector of "hairdressing and beauty" with a competitive market and low profit margins was about 100 per cent, while it was for the "business services" sector, due to more capital- and skill intensive conditions and higher entry barriers "only" about 50 per cent. However, for other countries the authors and the study by Behrenz et al. (2012) show low or insignificant effects.

in the UK Prince's Trust (Meager et al., 2003a,b) and in Spain (flat rate for young self-employed workers, Cueto et al., 2017) the maximum age is 30 and 35 years, respectively.[57]. Another important criteria that may influence the allocation or the amount of the subsidy is the duration of unemployment (for example a focus on long-term unemployed by the grant programs in Spain (Cueto and Mato, 2006) and in Denmark (Meager, 1996)) or a remaining unemployment entitlements in the German "New Start-Up Subsidy" (Caliendo et al., 2015; Caliendo et al., 2016). This concept may be of particular interest, to hinder the emergence of job-to-unemployment-to-job mobility. This means that a job is actively abandoned in order to qualify as eligible for funding. Insofar as the intention to set up a company existed in any case, this represents a considerable dead-weight loss, as unemployment was initially created by the start-up incentive and no new employment was achieved in total (this possibility is particularly discussed by Tokila, 2009 for the Finnish Start-Up Grant).

Furthermore, the eligibility of the company can be restricted, which, in turn, can reduce the number of people receiving funding. For this kind of selection process, the review of business plans is a kind of well-established approach and has been introduced in the majority of countries in recent years. The examination is usually not carried out by the employment agency itself, but by a competent external agency such as chambers of commerce and industry, a trade or professional organization, banks, tax consultants or others (an exception is the German "Einstiegsgeld" until the year 2008 where the federal employment agency was responsible for the examination; see e.g. Wolff et al., 2016). At the same time, this selection process is an important instrument of

[57] In particular with regard to the age criterion, there is a need for comprehensive studies on ways of reducing youth unemployment by promoting self-employment (Eurofound, 2016)

screening for the funding provider, which may help to reduce dead-weight losses. The additional effort involved means that the applicant has to show his or her actual interest in the start-up project and, in addition, a certain level of quality of the business plans and thus that the founding ideas can be carried out (Caliendo, 2016). Another way of selection on the business level is to exclude certain sectors (Haas and Vogel, 2016), which has not been part in any of the measures examined so far. This is based on the idea that different industries are characterized by different competitive situations and therefore also have different survival probabilities in these industries (see Fritsch et al., 2006 for the different survival rates in Germany). For the purpose of reducing displacement effects, it may therefore be useful to limit support to businesses which aim to enter sectors where comparatively low levels of entries and exits are observed in the past (Johnson, 2004). That is, there are still adequate profits in these markets and the entry of subsidized companies can therefore be accompanied by fewer distortion effects. At the same time, these profit opportunities are also a strong incentive to enter the market, which is why it is at least questionable to strengthen this with additional start-up incentives, as this will once again create dead-weight losses (Santarelli and Vivarelli, 2007).

Table 4.5: Eligibility criteria by country and measure

Country	Nr.	Eligibility Criteria	
		Person	Business
Australia	[1a] [1b]	Eligible unemployed people	Establishment of business plan mandatory, administrative selection based on likelihood of success
Denmark	[2]	Long-term unemployed and over 25 years	
Finland	[3]	Registered job-seeker grant necessary to start-up	External evaluation of founder and business concept; no competition distortion in local market
France	[4a]	Recipient of unemployment insurance, or means tested benefit	
	[4b]	Any unemployed	Business plan must be vetted
	[4c]	Unemployed and minimum social income recipients	Approval of business plan by labor administration required
Germany	[5a] [5b] [5c]	Unemployed with benefit entitlement	Competent external expert must assess sustainability of self-employment, work must comprise at least 18 hours/week
	[5d]	Unemployment benefit recipient	Competent external expert has to assess the sustainability of the self-employment since 2004
	[5e]	Registered unemployed with minimum entitlement to unemployment benefit I of at least 90 days	Competent external expert has to assess the sustainability of the self-employment
	[5f]	Registered unemployed with minimum entitlement to unemployment benefit I of at least 150 days	
	[5g]	Welfare recipients	Until 2008: submission of documents describing start-up, including a business plan since 2008: external approval of business plan
	[5h]	Benefit recipients (Social Code II) non-recipients of benefits; since 01/2012: benefit recipients (Social Code III) with a denial on [5e; 5f]	Approval of business plan by external authority
Hungary	[6]	Recipient of unemployment compensation	
New Zealand	[7]		
Poland	[8]	Registered unemployment	
Romania	[9]	Registered unemployed, income less than half of national minimum wage and (i) worked as an employee for at least 6 months in the last year or (ii) recent graduate from school or university	
Spain	[10a]	Registered unemployed	
	[10b]	Young men (under 30 years), young women (under 35 years)	
Sweden	[11a]		
	[11b]	Unemployed or at risk of becoming unemployed (over 25 years) knowledge in starting and running a business	Review of business idea and business plan by an external expert
UK	[12a] [12b]	Unemployed for 6 weeks	Business Plan compulsory 1.000 GBP (1.120 EUR) own capital
	[12c]	Youth unemployed (18-30 years) refused funding from other sources	
US	[13]	Newly unemployed eligible for unemployment insurance only	

Source: Author's own illustration based on referenced articles (Table 4.1).

In a larger context, the functionality of the selection process as a whole must also be discussed and analyzed when the question of eligibility criteria is raised. In fact, research has not yet investigated whether these selection criteria and processes actually contribute to higher program effectiveness. In addition to the above-mentioned restrictions also interdependencies with other programs as well as job opportunities are important. Germany, in particular, shows a complex system of funding instruments for various groups of unemployed people (see Section 2.3.2.2), so that regional and federal programs concurrently exist, each with its own administrative or external audits and funding conditions. In some cases rejections of one program by one authority is required in order to be eligible for other programs by another authority.

Next to the problem of administrative costs, conflicts can also arise between the entrepreneurship and ALMP objectives. The promotion in kind of "picking-the-winner"-approaches by authorities may, at best, identify the most promising founders and companies, which are often not the most disadvantaged unemployed people for which these subsidies have actually been introduced. However, these most promising beneficiaries are frequently not the ones who need start-up support most urgently, too. On the other hand, any attempt to take fairness of distribution into account in the selection procedure would jeopardize the quality of the selection (Eickelpasch and Fritsch, 2005).

Further, from research on selection processes of high growth firms (see e.g. Brown et al., 2017), we already know that such policy frameworks often tend to use easily identifiable factors (like age, sector, source of finance and prior employment status) as selection criteria to support the decision-makers with hard parameters in their choice. But due to the complexity and heterogeneity of business foundation and other characteristics of the founders, these criteria are often unsuitable for

identifying the most promising businesses ex ante. To what extent this is the case in the rather broader promotion of start-up incentives for unemployed persons with their completely different prerequisites is, therefore, a task of further research.

4.4.3 Type of support

Assuming that there is real discrimination against the unemployed on the credit market (see Section 4.4.1.2), policy makers are faced with the question of the type of support. As displayed in Table 4.6, typically, it is a decision between grants and loans. However, also other instruments like guarantees, warranties, credit insurance or tax reductions exist, but are of minor importance.[58]

The main advantage of grants from the administration's point of view is that they are easier to manage, as there is extensive experience in the application and payment procedure and these are also known from funding areas other than economic promotion. From the beneficiaries perspective, grants are of particular interest as they are easier to access and are often paid directly at the time of foundation. Also they have a high transparency due to the "gift" character as no payback is needed (Bulow and Rogoff, 2005; Santarelli and Vivarelli, 2007; De Klerk, 2008). The advantage of loans or microcredit instruments are, in turn, their repayment of means including interests, which make them available for a later reuse by the public lender. The borrower, in turn, has to pay them which makes them, compared to grants, less attractive.

[58] In fact, the only other types of support analyzed so far are the Spanish flat rate for young self-employed workers (Cueto et al., 2017) and the Hungarian self-employment assistance (O'Leary, 1999). While the former reduces minimum contributions to the social security system for a period of 30 months, the latter covers up to 50 per cent of the premium on loan insurance for funds borrowed to start the enterprise for a one-year period.

Table 4.6: Type and level of support by country and measure

Country	Nr.	Type of support	Level of financial support	
			Amount of benefit	Appropriation period
Australia	[1a] [1b]	Grant	Means tested unemployment benefit up to 9.594 USD (7.850 EUR) in 2001	12 months
Denmark	[2]	Grant	Up to 5.400 DRK (725 EUR) p.a.	Up to 3.5 years
Finland	[3]	Grant	Tied to size of unemployment benefit, average 500–650 EUR per month	10 to 15 months
France	[4a]	Grant	Lump-sum dependent on unemployment benefit category	
	[4b]		Lump sum up to 43.000 FF (6.500 EUR)	
	[4c]		Eligible for unemployment benefits: (i) receive unemployment benefits or (ii) exemption from social contributions (depends on compensation payment by their start-up) Not eligible for unemployment benefits: (iii) exemption from social contributions Recipients of minimum income: (iv) receive minimum income or (v) exemption from social contributions (depends on compensation payment by their start-up)	(i) up to 15 months (ii–v) one year
Germany	[5a] [5b] [5c]	Grant	Participant receives UB and additional lump sum of approx. 70% (for social security liabilities)	6 months
	[5d]	Grant	600 EUR (360 EUR; 240 EUR) per month in the 1st (2nd; 3rd) year, only granted if income does not exceed 25,000 EUR per year	3 years
	[5e]	Grant	Unemployment benefit + monthly lump sum of 300 EUR to cover social security costs	9 months + 6 month extension (only lump sum)
	[5f]	Grant	Unemployment benefit + monthly lump sum of 300 EUR to cover social security costs	6 months + 9 month extension (only lump sum)
	[5g]	Grant	Percentage (typically 50% + 10% for additional household members) of the basic cash benefit (333 EUR in Est Germany, 345 EUR in West Germany) to cover welfare recipients' regular expenses	Up to 2 years
	[5h]	Grant	Lump sum playment of 600 EUR per month + additional unemployment benefit II if eligible	1 year
Hungary	[6]	Grant	Equal regular unemployment compensation (monthly) coverage up to 50 per cent of premium on loan insurance for funds borrowed to start-up	12 months (+ 6 months extension)
New Zealand	[7]	Grant		
Poland	[8]	Loan	Loan limited to 20 times national average wage (4.800 EUR); market rates of interest; 50% principal reduction to businesses which survive at least two years	
Romania	[9]	Loan	25.000 USD (20.000 EUR)	
Spain	[10a]	Grant / loan	Up to 3.600 EUR (if registration as self-employment is maintained for at least two years, no payback is needed)	
	[10b]	Reduction of social security contributions	Self-employed in the last 5 years: 30% discount on minimum social security contribution (230 EUR) Not self-employed in the last 5 years: 80% discount for 6 months, 50% for 6 months, 30% for 18 months	30 months
Sweden	[11a]			
	[11b]	Grant	Member of unemployment insurance fund: (i) equivalent to unemployment benefit (ranges from 42 USD (34 EUR) per day to 90 USD (73 EUR) per day, reduced if benefit period of 300 days expired No member of unemployment insurance fund: (ii) 70% of basic insurance benefit	6 months
UK	[12a]	Grant	Differential payment schemes based on enterprise proposal	6–15 months
	[12b]	Grant	40 GBP (45 EUR) per week	Up to 1 year
	[12c]	Grant / loan	Low interest loans of up to 5,000 GBP (5.600 EUR) and grants of up to 2,500 GBP (2.800 EUR) in special circumstances	First 3 years of trading
US	[13]	Grant	Periodic allowances equal to unemployment insurance payment	6 months

Source: Author's own illustration based on referenced articles (Table 4.1). The conversion of the various currencies into EUR represents the actual exchange rates as of 21 January 2018.

However, the advantage for the beneficiaries is, next to the investable money, the opportunity to gain access to the (subsidized) capital market in order to collect experiences with credit financing and the chance to build up a credit history. This can help borrowers apply for loans from formal financial and banking institutions at a later date (Leone and Porretta, 2014; Minnetti et al., 2016).

Even if it would be reasonable to provide loans for reasons of economic justification as the discrimination was identified in the credit markets, grants are usually chosen as start-up incentives in the various countries. Only four of the analyzed measures are start-up incentives in the form of loans; therefore they are strongly underrepresented in the scientific literature. This is also in line with Haas and Vogel's (2016) findings, whose survey article on current funding policies in twelve European countries shows that there is a general trend towards providing grants rather than loans. An interesting hybrid model is the start-up incentive program in Spain (Self-employment grants; Cueto and Mato, 2006), where the support is provided as a grant, in so far as the start-up is maintained for a period of two years, otherwise the support has to be repaid.

However, it is not yet comprehensively known whether and how the different forms of incentives actually affect the discussed outcomes (see Section 4.4.1). In particular, it would be interesting if the various policy objectives could be achieved more effectively in one form or another. For example, it is conceivable that subsidies should be preferred if the aim is to promote the short-term survival of the subsidized firms or the employability of the founder. Loans, on the contrary, may be more appropriate in the case of an intended growth-oriented policy as the enterprises would be exposed to correspondingly stronger incentive

structures from the outset.[59] It would also be reasonable to discuss this against the background of limited government budgets and the large financial expenses incurred for start-up incentives (see Section 4.2). An interesting research design might be a comparison of grant and loan instruments with otherwise identical funding conditions for beneficiaries and subsidized companies as well as an unsubsidized comparison group. Also insights of self-selection processes could be derived from this.

The fact that the clarification of these issues is accompanied by considerable political interest can be seen, for example, in the fact that the European Commission (2016) encourages the European member states to develop and use innovative financial instruments in addition to grants. In this context, the European Commission highlights the focus of these instruments on self-employed and/or disadvantaged people as part of their cohesion policy.[60]

4.4.4 Level of financial support

As shown in Table 4.6, the level of financial support as another important institutional determinant consists of two factors. On the one hand side, there is the financial amount an unemployed person can receive in the case of an approval of his application for funding. On the other hand, there is the time over which the founder receives this funding amount. In the literature significant differences between the funding instruments analyzed are found.

[59] This argument is based on the assumption, that a start-up grant might also induce moral hazard as the founder is not entirely responsible for the risks, i.e. no or low income, he has taken on (Caliendo et al., 2015).

[60] However, there are significant problems in the implementation of these measures, as a lack of experience (need of capacity building) on the part of the administrative authorities often seems to hinder the efficient use of these instruments (European Commission, 2016; Minnetti et al., 2016).

Loans, which are usually paid out immediately, range from 5,000 GBP (5,600 EUR) in the UK (Meager et al., 2003a,b) to 25,000 USD (20.000 EUR) in Romania (Rodríguez-Planas and Jacob, 2010; Rodríguez-Planas, 2010) or are limited to a factor of the national average wage in Poland (O'Leary, 1999). On the other hand side, grants are paid either as a continuation of unemployment benefits (typically on a monthly basis for a certain appropriation period) or as a one-off payment directly at the outset of self-employment.

The grant programs in Germany, France and Finland are financially more extensive, whereas the policies in Sweden and Spain are more modest. In Germany, for example, the "Start-Up Subsidy" (see e.g. Caliendo and Kritikos, 2010) amounted to a monthly lump sum payment of about 25,000 EUR in total in the first three years. That the start-up funding is typically provided directly at the time of foundation as an entry subsidy (for a discussion see Santarelli and Vivarelli, 2007) expresses, in particular, the incentive to take up work (ALMP). Only in the UK support scheme one can apply for support within the first three years after start-up, which is closer to the idea of corporate subsidies as part of entrepreneurship policies.

In this context, Millán et al. (2012) point to an interesting finding in their study on determinants on firm survival for the EU-15: Even though entering self-employment from unemployment has a strong negative effect on the survival probability within self-employment, compared to self-employed with other starting status than unemployment the survival rates are comparatively higher the higher the total amount of the received start-up subsidies expenditures are. This means that the level of funding can be a decisive and supporting factor not only as an incentive to take up self-employment, but also as a means of maintaining it. However, while a positive correlation between higher

promotion and higher survival rates is not surprising, there is unfortunately a lack of empirical evidence of the interrelation of the level of support and other program outcomes. For the purpose of effective policy design, it would not only be necessary to know whether there are interrelationships, but also whether they are linear in their course or whether certain thresholds exist with regard to the level of funding. In concrete terms, it would be interesting to see to what extent limits exist, up to which, for example, there is no damage to the market mechanism[61] or from which a disproportionate employment effect can be achieved through the creation of new companies.[62]

An interesting starting point for further research is the concept of Haas and Vogel (2016), which would also act as a connective link to the eligibility criteria discussion of Section 4.4.2. Haas and Vogel (2016) classify existing funding instruments according to the two criteria (i) level of financial support and (ii) strictness of eligibility. This enables them to identify three different groups of funding approaches. Firstly, a group of low strictness of eligibility and medium to high levels of financial support exists (for example specifically the current policies in France, but also Sweden and others), which brings together generous funding programs. Although they are particularly interesting from the participant's perspective due to their financial scope and low administrative effort, they may also create false incentives, which may lead to firms with little economic growth and job impact as well as high failure rates

[61] For example, the European Union assumes that an amount of 200,000 EUR can be paid to a company over a period of three years without creating market distortions (European Union, 2013b).

[62] However, Millán et al. (2014) once again point out that, compared to other founders, starting a business out of unemployment is in itself associated with an increasing likelihood of becoming unemployed again. This applies both to former unemployed founders with and without employees. For other groups of founders, however, the chances of survival for employers are significantly higher than for own-account workers.

after the funding period.

Secondly, a group of high strictness of eligibility and medium to high level of financial support exists, which is characterized in particular by Germany and Greece, but also Austria, Switzerland and Spain. After a competitive selection process by the administration, generous resources are made available to the unemployed persons. Especially Germany is interesting here, as it changes between the different eligible groups on a recurring basis (see Table 4.1).

Thirdly, a group of low level financial support exists. As the financial impact of the funding on the participant and the company is very small, only minor negative effects of the funding, but also only minor positive externalities such as job creation should be expected by policy makers. This classification could be used in a meta-analysis of impact estimates (see Kluve, 2010 and Card et al., 2015 for comprehensive studies on all other ALMP other than start-up incentives) in ALMP evaluation setting that accounts for differences between a participant group and a comparison group.[63]

4.4.5 Supplementary services

In addition to the lack of financial resources (see Section 4.4.1), the unemployed may lack the general knowledge necessary for self-employment. This includes experience with the general founding process as well as industry-specific knowledge and management experiences (Hinz and Jungbauer-Gans, 1999; Caliendo et al., 2015). In order to counteract

[63] In addition to the class assignment, information on the estimated impact of the program on the outcome of the participants as well as their standard deviation and the sample sizes are needed for this kind of studies. Typically, simple OLS estimations or, in the case of 3-way classification of sign and significance (positive significant, insignificant, negative significant), ordered probit regressions could therefore be implemented.

this potential shortage, there are complementary funding opportunities for training and technical support, which can be found in Table 4.7. These are not so much intended to serve as an incentive for starting a business, but rather to increase the probability of survival. That is, some of these measures before start-up or in an early phase of the self-employment period are voluntary; in some cases the subsidized formerly unemployed business owners have to take part in the training schemes (Meager, 1996). There is also large variation in terms of provided services and content. This ranges from general education, which deals with the foundation process and financial management, to personalized consulting and coaching aimed at the formulation of individual business strategies. Although there is no study to date that explicitly deals with the connection between training measures for former unemployed founders and the later development of the company, the most common problem with such measures is generally seen from the ALMP perspective in lock-in effects (Dauth et al., 2016; Osikominu, 2016). This means that, during the training phase, the unemployed person's search activities for a job are limited, which leads to strong negative employment effects in the short term, but in the long run to better employment opportunities due to the investment in human capital. Given the fact that unemployment is likely to be ended by the creation of the business, the lock-in effects found so far are likely to be of less importance here. From an entrepreneurial perspective, participation in such measures can also be viewed as positive, since the human capital obtained makes a significant contribution to the company's success in financial terms. Also, the duration of maintaining a business or personal income are significantly and positively linked to its resources (Martin et al., 2013).

Table 4.7: Supplementary services and special program features by country and measure

Country	Nr.	Supplementary services and special program features
Australia	[1a] [1b]	Pre entry-business training, voluntary post-entry training and business counseling
Denmark	[2]	
Finland	[3]	Training courses
France	[4a] [4b] [4c]	Vouchers with a shelf life of 18 months post entry business counseling
Germany	[5a] [5b] [5c]	Unemployed person does not lose claims to unemployment payments by transition into self-employment for 4 years, social security during program phase left to the individuals
	[5d]	Requirement to join the legal pension insurance and reduced rate on health insurance
	[5e]	Claims on subsidy for the first program phase; second period dependent on administrative decision
	[5f]	
	[5g]	
	[5h]	Additional training courses are supported with lump sum payments
Hungary	[6]	Professional entrepreneurship counselling and training courses (costs are covered up to 50 per cent)
New Zealand	[7]	
Poland	[8]	
Romania	[9]	Personalized assessment, consulting and training
Spain	[10a]	Training and advisory
	[10b]	
Sweden	[11a]	
	[11b]	Mandatory participating in training course if lacking experience
UK	[12a] [12b]	Pre-entry training with basic skills
	[12c]	Volunteer business mentor
US	[13]	Pre-entry counseling by labor office

Source: Author's own illustration based on referenced articles (Table 4.1).

4.5 Conclusions

To improve future evaluation of start-up incentives for unemployed persons, this paper provides an analytical framework for the institutional

settings. Based on a broad literature review, it is shown that the state of research in its current form of ex-post evaluation studies is not in the position to provide the needed adequate evidence-based policy advice that is demanded by politicians. In order to meet this demand, this paper initiates discussions and identifies research questions that need to be clarified in order to approach the target of a more effective policy design. This is necessary as the existing evaluation results are not unambiguous.

The conclusive considerations are as follows: Firstly, evaluation studies of start-up incentives for unemployed persons have so far focused on supposedly "positive" outcomes such as survival rate, employability, job creation, change in self-employment rates, business growth, income changes and access to social security. Important negative effects such as displacement effects and dead-weight losses have so far been insufficiently investigated. Although these are much more difficult to record, they are inherent in a comprehensive assessment of the measures. Up to now, the literature has been largely limited to either pointing out their general existence and the associated negative consequences, or, in the case of dead-weight losses, a measurement through surveys of the beneficiaries. Comprehensive studies at the micro level, taking into account individual decision making of the unemployed persons (including existing job offers and other ALMPs) as well as local, sector-specific labor markets are not yet available but might provide the necessary insights.

Secondly, an appropriate evaluation of start-up incentives for unemployed persons should consider to a larger extent the political perspective and economic circumstances. The present literature does not sufficiently distinguish between what the original policy objective of the measure is, that is, why it was introduced, and how the measure

performed in respect of this stated objective. It is argued, that this is partly due to a lack of clear formulation of the objectives by political decision-makers. Not only is this a prerequisite for adequate statements on external validity of these studies, but also this is of particular interest as this paper discusses conflicts between the two policy areas of ALMP and entrepreneurship policies. The former, ALMP, are oriented towards the labor market prospects of an individual unemployed person and the latter, entrepreneurship policies, towards the growth and survival of businesses, which is a point that is often ignored in the previous literature. In this respect, there is also a lack of basic explanatory models for the fact that there are not only considerable differences between countries in their financial commitment and their number of participants in these kind of policies, but also that there are considerable fluctuations of this measures within different countries. That is, times of intensive demand for these start-up incentives are often followed by periods with considerable declines in the number of participants. Whether this is politically initiated, for example, by the reduction of financial resources, whether the unemployed lose confidence in the measure due to negative feedback by supported individuals and, as a result, the general demand for the start-up incentives decreases or whether there are overarching interdependencies with the unemployment rate, has not yet been clarified.

Thirdly, the use of start-up incentives for unemployed persons requires verifiable economic justification by identifying market failures. In particular, the topic of credit constraints and capital market imperfection requires further academic attention. Although research has already been able to show that other groups such as women and migrants have been discriminated against by banks, no such study is yet available for unemployed persons with a desire to start-up a business. If this discrimination exists at all, and there are reasons to believe that they don't as

unemployment is in fact associated with a higher risk of failure, then it should be followed by a discussion on the appropriate type of funding. So far, mainly grants have been provided to unemployed persons by the governments, even though that the assumed market failure is that the unemployed persons do not receive the credits demanded by private banks. The granting of (micro)-loans by public banks, subsidized interest rates or guarantees and warranties by the state are obvious alternatives and have so far been neglected in research, although there is a great deal of political interest in the subject.

Fourthly, due to the lack of clarification of these fundamental issues, it is not yet possible to identify best practices with regard to the institutional framework. We are a long way from an evidence-based policy making that aims to make the instrument of start-up incentives for unemployed persons as effective as possible. This is because individual funding conditions such as the type and amount of financial support, the broad or restrictive definition of target groups (and the selection process as such), the necessity of a screening process through the introduction of business plans, etc. are not linked through empirical studies to the investigated outcomes of the measures. This paper is a first step in this respect, in that it introduces a uniform institutional framework to compare the funding instruments studied in the literature so far. Not only is it shown how different the individual funding instruments are within and between countries (high / low restrictive eligibility criteria, high / low level of financial support), but also the possible repercussions on outcomes are discussed. Nevertheless, it remains on a descriptive and theoretical level. The empirical examination of this consideration is the responsibility of further studies.

To address these open research issues, cooperation between research and politics in particular must be strengthened as more comprehensive

studies by scholars largely depend on the availability of data from the implemented measures. A promising source of longitudinal data for further studies on the policy level may be the result and outcome indicator system introduced for the funding period 2014-2020 by the European Commission (European Union, 2013a, for an overview see McCann and Ortega-Argilés, 2016). As all member states are equally obliged to collect these data for their co-financed measures of the EU cohesion policy, there is a considerable degree of heterogeneity in terms of policy designs and economic circumstances. Here, a contribution could be made at the macro level to the considerations made between policy making process, policy design and performance of the measures, whereby economic conditions at the regional level such as unemployment rate and GDP per capita could be taken into account. Additionally, as more studies with information on the micro level are needed to analyze specifically the problems of displacement and dead-weight effects, it is likely that especially the Nordic Countries can contribute to the literature with their comprehensive individual information on income, employment history and firm development in a valuable way (Fritsch and Storey, 2014).

Chapter 5

Unemployment Reduction through Self-Employment – A Gender Question?

"SHUI TA: Have they gone? All of them? I cannot hold out any longer. Illustrious Ones, I have recognised you!
THE SECOND GOD: What have you done with our good person of Szechwan?
SHUI TA: Let me confess the frightful truth. I am your good person!
He takes off his mask and rips away his costume. Shen Teh stands there.
THE SECOND GOD: Shen Teh!
SHEN TEH: Yes, it is me. Shui Ta and Shen Teh, I am both of them.
Your original order
To be good while yet surviving
Split me like lightning into two people."

— Brecht (2016, p. 181)

Abstract.[64] Using macro-level panel data of 23 OECD countries during the period 1991–2015, we empirically analyze whether an increase in self-employment leads to a reduction of unemployment and whether the effect depends on the gender of the self-employed. Estimating population-weighted vector autoregressive models, we find that self-employment exerts positive employment creation effects. Moreover, male self-employment affects employment growth somewhat faster than does female self-employment. However, we also find that unemployment pushes males into self-employment in the short-run while, in the medium-run, we confirm a pull effect independent of the gender of the self-employed.[65]

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[64] This chapter is based on joint work with Tina Haussen.

[65] JEL-Classification: J23; J64; L26; L53; M13; O11; J16. Keywords: Unemployment; Self-employment; Gender; VAR; Entrepreneurship.

5.1 Introduction

As entrepreneurship is considered one of the chief engines for economic growth (Thurik, 2009; Kelley et al., 2013), its impact on unemployment is deemed important (Faria et al., 2010). The link between entrepreneurship and unemployment is, however, of a complex (causal) nature. Some scholars empirically reveal that indeed self-employment does contribute to a reduction in unemployment (Thurik et al., 2008). Conversely, others find that the reverse holds true, i.e. that unemployment pushes (Evans and Leighton, 1990; Fritsch and Falck, 2007; Lasch et al., 2007) or pulls (Audretsch and Fritsch, 1994; Garofoli, 1994) individuals into self-employment.

As noted by Audretsch et al. (2015), a common feature of most empirical studies on this topic is that they treat the groups of people under consideration as if they consisted of homogeneous individuals. Clearly, this is not the case. Self-employed individuals, in fact, differ in many respects; for example in terms of their abilities, possibilities and preferences. One characteristic that has received considerable attention within the corresponding literature is the gender of the self-employed. Not only is the likelihood of starting a new company out of unemployment higher for men than for women (Cowling and Taylor, 2001; Wagner, 2007) but also the economic performance of founded businesses differ, i.e. in terms of employment effects and earned income (Cowling and Taylor, 2001; Andersson Joona and Wadensjö, 2008).

Building on these gender differences on the micro level, the aim of this paper is to find out whether an increase in self-employment leads to a reduction of unemployment at the macro level and whether this effect depends on the gender of the self-employed. We, first, test the relationship between self-employment and unemployment rates in a panel

of 23 OECD countries during the period 1991–2015. In order to establish whether self-employment affects unemployment and/or vice versa, we run a population-weighted Vector Autoregressive Model (VAR) and perform Granger-causality tests (Granger, 1969). In a second step, we re-run our baseline model separately for male and females.

Our empirical results indicate that self-employment exerts positive employment creation effects. Male self-employment affects employment growth somewhat faster than does female self-employment. However, we also find that unemployment pushes males into self-employment in the short-run while, in the medium-run, we confirm a pull effect independent of the gender of the self-employed.

The remainder of this paper is structured as follows. In Section 5.2, we review, first, the existing theoretical and empirical literature dealing with the ambiguous relationship between unemployment and self-employment and, second, literature that deals with gender gaps in self-employment. The empirical strategy is given in Section 5.3, before the data used and some descriptive statistics are provided in Section 5.4. Our results are given in Section 5.5. Section 5.6 concludes.

5.2 Literature review

5.2.1 The ambiguous link between self-employment and unemployment

Among economists, a lively discussion exists about how unemployment and self-employment rates are related. A possible positive link can be traced back to Oxenfeldt (1943) who argues that individuals in the labor force are confronted with three activity possibilities on how to allocate their available time: wage-employment, unemployment, and self-employment. Unemployment is assumed to represent the least at-

tractive option for the individual since it spends the least utility. According to the so called 'unemployment push hypothesis' or "refugee effect" (Audretsch et al., 2015), high levels of unemployment rates then induce or "push" individuals with limited wage-employment prospects to entering into self-employment since opportunity costs of starting a business have decreased. A counterargument to this hypothesis may be that unemployment potentially results in a lack of wealth and credit constraints that may hinder unemployed individuals in becoming self-employed (Cressy, 2000; Hurst and Lusardi, 2004). The unemployed also tend to lack other characteristics needed in order to become self-employed, e.g. higher human capital levels, professional competencies, and networks, amongst many others (Caliendo et al., 2014; Caliendo et al., 2015).

The level of unemployment may also disproportionally affect self-employment because of the chain of reasoning that explains the "unemployment pull hypothesis". Economies that are characterized by low unemployment rates are typically those with higher economic development, i.e. higher demand and growth, and are therefore likely abundant in entrepreneurial opportunities. Higher self-employment rates then result from demand-inducement. Conversely, high unemployment rates may be associated with low economic growth and fewer entrepreneurial opportunities (Thurik et al., 2008; Audretsch et al., 2015).[66]

Empirical support for the unemployment-push hypothesis is, for example, provided by Evans and Leighton (1990) for the US, Guesnier (1994) and Lasch et al. (2007) for France, and Fritsch and Falck (2007) for Germany. Reynolds et al.'s (1995), Santarelli et al.'s (2009), and Audretsch et al.'s (2010) findings, however, point towards a negative re-

[66] However, based on the Gibrat's law, the growth of firms is independent from their size. An increasing number of small firms instead of large ones should therefore not affect unemployment (Sutton, 1997).

lationship between unemployment and self-employment for US, Italian, and German regions, respectively, which underlines the unemployment pull hypothesis. No clear evidence or insignificant results, on the contrary are found by Armington and Acs (2002), Ritsilä and Tervo (2002), Sutaria and Hicks (2004), amongst others.

Using macro data from 23 OECD countries and applying a vector autoregressive model, Thurik et al.'s (2008) results indicate that unemployment and self-employment simultaneously affect each other. Yet, the negative effect of changes in self-employment on subsequent changes in unemployment is stronger. That is, in addition to the two abovementioned relationships between unemployment, economic growth and self-employment, dual and reverse causality may be present: Changes in self-employment can affect economic development and therefore unemployment (Van Stel et al., 2005). If founders enter the market, competition likely increases and positive productivity effects may emerge (Geroski, 1989; Acs and Audretsch, 2003), which can result in positive employment effects depending on the quality of start-ups and the response of established companies to the competitive pressure caused (Mueller et al., 2008; Fritsch and Storey, 2014). If these start-ups hire more employees than established firms have to downsize due to the increased competition, this can lead to a reduction in unemployment ("entrepreneurial effect"; Hart and Oulton, 1999; Pfeiffer and Reize, 2000; Lawless, 2014; Doran et al., 2016). However, as famously hypothesized by Shane (2009), both the survival rate and the employment contribution of start-ups are rather low which would imply a very limited, if at all existing, unemployment lowering contribution of start-ups as only a limited number of high-growth firms is responsible for the majority of newly created jobs (Anyadike-Danes et al., 2009; Coad et al., 2014; Daunfeldt et al., 2015; Bravo-Biosca et al., 2016).

5.2.2 Gender gaps in self-employment

As discussed in Section 5.2.1, both a positive and a negative relationship between unemployment and self-employment may be present. One attempt to more closely investigate the presence of the one or the other effect and underlying causes is to take a closer look at the individual characteristics of the self-employed. Most empirical studies treat the individuals in their sample as a homogeneous group which is misleading in so far as there is ample evidence that especially the self-employed strongly differ in their abilities, possibilities and preferences, among other characteristics.

In this paper, we focus on gender gaps in self-employment. Despite a rising trend in females' self-employment rate in recent decades (Devine, 1994; Koellinger et al., 2013), in the EU, for example, men are nearly twice as likely to enter into self-employment than women (see e.g. Leoni and Falk, 2010; Verheul et al., 2012; Koellinger et al., 2013; OECD, 2016).

The gender gap in the propensity to move towards self-employment may come as a surprise inasmuch women balance not only work and leisure but – to a larger extent than do men – also perform child care and housework (Lefebvre and Merrigan, 2008; Williams, 2012; Caliendo and Künn, 2015). Employers may moreover practice statistical discrimination towards women if their biographies include family-related interruptions which, ultimately, reduces their wage-employment opportunities (Rosti and Chelli, 2005; Caliendo and Künn, 2015; Simoes et al., 2016). Especially unemployed women should therefore be more likely to become self-employed than men since self-employment provides more flexible work arrangements and independence than does

traditional wage-employment (Edwards and Field-Hendrey, 2002).[67] However, women and men may have different motives for becoming self-employed. While women tend to value flexible work arrangements, men start companies primarily because of the potentially higher financial benefits (Wellington, 2006; Gurley-Calvez et al., 2009).

But why are women less likely to become self-employed than men? In a growing strand of literature possible reasons for this result are examined. First, in both empirical and experimental studies it is observed that women tend to be more risk averse than men, and that they have a stronger dislike of competition (Dohmen et al., 2011; Charness and Gneezy, 2012). Since income from self-employment is very uncertain, a higher risk aversion has a lower probability of preferring and actually choosing an entrepreneurial career (Verheul et al., 2012).

Second, even if women become self-employed, they invest less capital and show a different borrowing behaviour than do men. In particular, they rely less on external capital but more on their own resources (Sena et al., 2012; Simoes et al., 2016). However, a sufficient investment of capital is an important prerequisite for the step into self-employment.

Third, as shown by Koellinger et al. (2013), women's networks are less diversified than those of men – e.g. because their relatively larger family commitments are accompanied by less pronounced networks and contacts. And these are moreover more likely to be found in the circle of family and friends than in business and work-related environments.

Finally – with special focus on the group of unemployed – descriptive statistics show that although unemployed women are typically better educated than their male counterparts (Andersson Joona and Wadensjö, 2008), they are still relatively more affected by long-term unem-

[67] Indeed, among those women who are actually self-employed, about half work part-time whereas one third works from home (Fairlie and Robb, 2009).

ployment and more likely to be single parents. The latter features may lead to larger capital constraints and human capital depreciation and an absence of labour-related networks and, thus, less valuable business ideas (Caliendo and Künn, 2015).

5.3 Modeling the link between self-employment and unemployment

We closely follow Thurik et al.'s (2008) model that builds upon the work of Carree et al. (2002, 2007). Broadly speaking, the model builds the framework for how actual self-employment and optimal self-employment rates can influence economic performance, here the unemployment rate.

Assume that for each country i in year t an optimal self-employment rate $SE^*_{i,t}$ exists as a function of the stage of a country's economic development. $SE^*_{i,t}$ is optimal in the sense that deviations from that level in either direction decrease economic performance: If a country's self-employment rate $SE_{i,t-1}$ is lower than the optimal one ($SE_{i,t-1} < SE^*_{i,t}$), the economy's competitiveness and dynamic efficiency are likely diminished which negatively affects growth. Too high self-employment rates ($SE_{i,t-1} > SE^*_{i,t}$), on the contrary, absorb too much (human) capital in a large number of marginal entrepreneurs which induces an underutilization of economies of scale and scope (Carree et al., 2002; Thurik et al., 2008).

A country i's unemployment rate U_{it} in year t can be decomposed into two components: first, the unemployment rate $U^0_{i,t}$ that would be present if the actual self-employment rate would equal the optimal one ($SE_{i,t-1} = SE^*_{it}$) and, second, the impact on unemployment stemming from deviations of $SE_{i,t-1}$ is from the country-specific optimal self-

employment rate; represented by equation (5.1)

$$U_{i,t} = U^0_{i,t} + \gamma |SE_{i,t-1} - SE^*_{i,t}| \qquad \text{with } \gamma > 0, \tag{5.1}$$

where the coefficient γ is assumed to be positive, that is, any positive or negative deviation from the optimal self-employment rate increases unemployment. Taking the first differences of equation (5.1) leads to

$$\begin{aligned} \Delta U_{i,t} &= U_{i,t} - U_{i,t-1} \\ &= \Delta U^0_{i,t} + \gamma \left(|SE_{i,t-1} - SE^*_{i,t}| - |SE_{i,t-2} - SE^*_{i,t}| \right). \end{aligned} \tag{5.2}$$

The optimal self-employment rate is assumed to vary only little over time given its dependence on firmly established institutional and socio-economic factors (Thurik et al., 2008; Prieger et al., 2016). In case both the self-employment rate in period $t-1$ and that in $t-2$ ($SE_{i,t-1}$ and $SE_{i,t-2}$) are above the optimal self-employment rate ($SE^*_{i,t}$), the term in brackets in equation (5.2) reduces to $\Delta SE_{i,t}$. Adding start-ups to an economy with an already larger than optimal start-up rate therefore increases unemployment. In case both $SE_{i,t-1}$ and $SE_{i,t-2}$ are below $SE^*_{i,t}$, the term in brackets reduces to $-\Delta SE_{i,t-1}$. Increasing the self-employment rate in an economy that consists of too few start-ups thus decreases unemployment. In case the self-employment rate in one period is lower whereas in the other it is higher than $SE^*_{i,t}$, and both are close to the optimal one ($SE_{i,t-1} \approx SE_{i,t-2} \approx SE^*_{i,t}$), the term in brackets vanishes. Then, $SE^*_{i,t}$ does not affect $\Delta U_{i,t}$.

Following Audretsch et al. (2002) and Thurik et al. (2008), we undertake some further transformations of equation (5.2) in order to derive an empirically estimable equation. First, we assume $U^0_{i,t}$ to be idiosyncratic with respect to country and time (captured in the error term $\epsilon_{i,t}$). Time dummies D_t are therefore included in order to control for

business cycle effects common to all countries. Since we use first differences, country-specific effects are differentiated out which is why an inclusion of country dummies is not needed. Second, we include the lagged difference in unemployment rates as an explanatory variable to test for the direction of causality. Third, we include multiple time lags in a one-by-one manner so as to test whether the expected effects are of short-run or medium-run in nature. Lastly, we additionally run the complementary model where the difference in the self-employment rates are related to a function of its lagged differences and the difference in unemployment rates (and time dummies and the error term) to test for the case of reverse causality related to the entrepreneurial effect. The resulting models (5.3a) and (5.3b) then read

$$\begin{aligned} U_{i,t} - U_{i,t-L} = \; & \alpha + \sum_{j=1}^{J} \beta_j \left(SE_{i,t-jL} - SE_{i,t-(j+1)L} \right) \\ & + \sum_{j=1}^{J} \zeta_j \left(U_{i,t-jL} - U_{i,t-(j+1)L} \right) \\ & + \sum_{t=1}^{T} \delta D_t + \epsilon_{i,t} \end{aligned} \tag{5.3a}$$

$$\begin{aligned} SE_{i,t} - SE_{i,t-L} = \; & \alpha + \sum_{j=1}^{J} \phi_j \left(U_{i,t-jL} - U_{i,t-(j+1)L} \right) \\ & + \sum_{j=1}^{J} \varphi_j \left(SE_{i,t-jL} - SE_{i,t-(j+1)L} \right) \\ & + \sum_{t=1}^{T} \psi D_t + \nu_{i,t} \end{aligned} \tag{5.3b}$$

Based on equations (5.3a) and (5.3b) we run a population-weighted Vector Autoregressive Model (VAR). In order to establish whether unemployment causes self-employment and/or vice versa, we perform

Granger-causality tests (Granger, 1969). Hereby we can test how much of the variation in self-employment (unemployment) can be explained by previous self-employment (unemployment). In a second step, it can be found out whether lagged values of unemployment (self-employment) can increase the explanatory power of the model. To be precise, if the coefficients of lagged unemployment (self-employment) are significant, then self-employment (unemployment) is said to be Granger-caused by unemployment (self-employment). In the choice of the lag length, we follow Thurik et al. (2008) and include, four, eight, and twelve-year lags. Likelihood ratio tests are applied in order to test whether the inclusion of extra lags improves the model significantly. Finally, as to test whether the effects found differ by the gender of the founders, we additionally run sub-sample analyses for males and females.

5.4 Data

To estimate equations (5.3a) and (5.3b), we construct a country-level dataset encompassing 23 OECD countries for the 1991 to 2015 period. In most related empirical studies, the Compendia database (Van Stel, 2005) is used. The advantage of this data is that the rates of self-employment have been harmonized over years and countries. This is necessary because countries report self-employment rates to the OECD (the underlying data source of Compendia) based on different definitions. The disadvantage, however, is that the data are not put out separately for men and women. We therefore use the data provided by the World Bank (2017) for self-employment rates, which are part of the ILO (2017) estimates. Like Compendia, these data are harmonized across countries and years "by accounting for differences in data source, scope

of coverage, methodology, and other country-specific factors" (World Bank, 2017). In principle, there are rates of self-employment for far more than 23 countries, especially for many developing countries. However, the World Bank (2017) warns against using the self-employment rates of women from certain, mostly developing countries for analyses or comparing these rates with those of women from developed countries, as social, legal and cultural disagreement may exist over the definition of women's self-employment. Given this reference, we limit our empirical analysis to those countries that are also used in Compendia. These all belong to the developed, western world, which is why possible differences in the definition of women's work should be rather small.

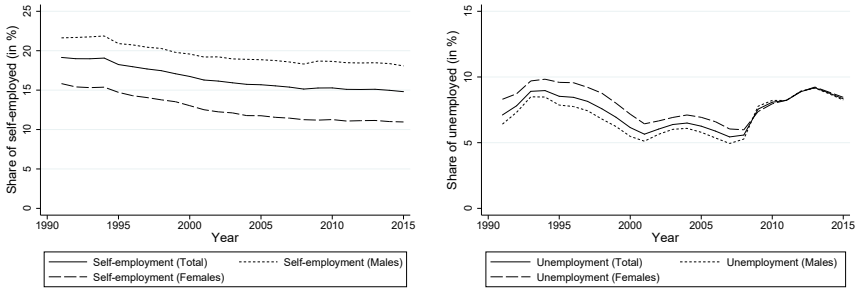
The share of self-employed workers SE is defined as the percentage of own-account workers (or those who work with one or a few partners or in cooperative) among the total labor force (World Bank, 2017). This self-employment measure comes at the cost that it neither differentiates by type of self-employment (start-up or already established) nor by high- or low-tech sectors, or by qualification needed. Still, operationalizating entrepreneurial activity by self-employment rates is well established given its comparability over countries and time (Storey, 1991; Thurik et al., 2008). Unemployment rates U are defined as a country's share of the labor force that is without work but available for and seeking employment. In the subdivision of self-employed and unemployment rates by gender, the corresponding Figures 5.1a and 5.1b are given as a percentage of this subgroups' labor force.[68]

Figure 5.1 shows the average self-employment and unemployment rates of all 23 countries for the period from 1991 to 2015, with both measures also being broken down by gender. The average total, male, and female

[68] For example, the female self-employment rate is the number of self-employed females expressed as a percentage of the female labor force (World Bank, 2017).

self-employment rate shows a decreasing trend over the whole observation period. They were highest at the beginning of the 90s (ranging from 18 to 23%) and lowest in 2015 (ranging from 12 to 18%). The share of male self-employed is higher than that of females at each year throughout the observation period.

The average unemployment rate, on the contrary, ranges between 5 and 10%. It decreased after the early 1990s before it increased again at the start of the financial crisis in 2007/08. Until that latter event, women had consistently higher unemployment rates than men whereas since 2007/08, unemployment is rather similar across gender.



(a) Average self-employment rate, 1991-2015

(b) Average unemployment rate, 1991-2015

Figure 5.1: Average self-employment and unemployment rates 1991-2015 of 23 countries

Source: World Bank (2017)

Figure 5.1 does not, however, reveal variation in the self-employment and unemployment rates within countries over time. Given this paper's focus on the effect of self-employment on unemployment rates,

in Table 5.1, we show 8-year changes[69] of those six country/time combinations with the highest and lowest changes in the self-employment rate from 1991 to 1999 and from 1999 to 2007. In the total sample, four out of the six country/time combinations with the largest increase in self-employment are characterized by a subsequent decrease in total unemployment whereas two show the opposite. Similarly, for four of the six country/year combinations with the strongest decline in self-employment rates an increase in unemployment rates in the following eight-year period is recorded. A similar, somewhat more mixed result can be seen when the self-employed rates are broken down by gender.

Table 5.1: Summary statistics

		Self-employment $SE_t - SE_{t-8}$			Unemployment $U_{t+8} - U_t$		
Country	Year t	Total	Males	Females	Total	Males	Females
Canada	1999	2.2	1.8	2.8	-1.6	-1.5	-1.7
Netherlands	2007	1.7	3.0	0.3	3.7	3.7	3.7
Germany	2007	1.2	1.2	1.5	-4.1	-3.5	-4.6
Germany	1999	1.1	2.2	-0.2	-0.2	-0.1	-0.4
United Kingdom	2007	0.8	0.9	0.6	0.0	0.0	0.2
New Zealand	1999	0.7	1.0	0.6	-3.4	-3.9	-2.8
Austria	1999	-4.4	-4.8	-3.8	0.2	-0.2	0.5
Iceland	2007	-4.6	-5.2	-3.9	1.7	1.7	1.7
Greece	1999	-4.7	-3.8	-6.0	-3.5	-2.5	-5.3
Norway	1999	-6.1	-7.8	-4.0	-0.7	-0.7	-0.8
Iceland	1999	-6.8	-9.3	-3.5	0.1	0.6	-0.5
Greece	2007	-6.8	-5.4	-8.6	16.5	16.5	16.0

Notes: SE_t and U_t denote the self-employment and unemployment rate in year t.
Source: World Bank (2017).

[69] We use eight-year changes based on our regression results in Section 5.5. Descriptive statistics for other time intervals can be obtained from the authors upon request.

5.5 Empirical results

The research question in this paper is whether self-employment among men and women has different effects on unemployment given the gender differences in the motivation to found a business and its survival and success probability (see Section 5.2). To this end, we use a population-weighted VAR model (equations (5.3a) and (5.3b)) to, first, estimate the effect of self-employment on unemployment for the entire sample (Table 5.2) and then, in a second step, divide the self-employment rate into female and male self-employed persons (Table 5.3).

As explained in more detail in Section 5.3, the 115 observations in the corresponding Models (Ia) represent the 23 countries in our sample observed in 1999, 2003, until 2015, that is, in 4-year steps. We closely follow the procedure of Thurik et al. (2008) and step-by-step include additional lags in order to control for a possible delay in the effect. In Models (IIa) and (III) we add the second and third lag ($(t-8)-(t-12)$ and $(t-12)-(t-16)$), respectively. Note that including these extra lags comes at the cost of a reduction in the sample size, i.e. to 92 and 69 observations. We run likelihood ratio tests in order to test whether the inclusion of extra lags improves the model significantly. Since for this test the numbers of observations of the models to be compared have to be the same, in Models (Ib) and (IIb) we re-run Models (Ia) and (IIa) with the observations included in Models (II) and (III) only.

From the upper panel of the initial Model (Ia) in Table 5.2, we obtain an insignificant coefficient for the lagged change in self-employment on a change in unemployment. Also, the p-value of the Granger-causality test is above 0.1 suggesting that self-employment does not significantly cause unemployment to decrease after a four-year lag. When including a second and especially a third lag, however, it appears that self-

employment significantly causes unemployment to decrease after an eight- (Models IIa, b) and twelve-year lag (Model (III)), respectively. The finding that those countries that are characterized by a larger increase in self-employment rates are also those with lower unemployment rates may be interpreted in the light of Kirzner (1973) who describes entrepreneurship as an exploitation of entrepreneurial opportunities and the recognition of hitherto untapped profit possibilities. In a Schumpeterian process (Schumpeter, 1934), old products and production processes are then replaced by new ones being generated by small, newly founded businesses. This process increases consumer satisfaction and, ultimately, triggers employment and economic growth (Sutton, 1997; Thurik et al., 2008). However, the results show that these changes take time. The establishment of new companies in the market and their contribution to reducing unemployment is not initial, but needs an adjustment process in the range of eight to twelve years. These findings also support the conclusions by Fritsch and Mueller (2004), who state that it is not the direct employment effect of new businesses creation that contributes to the regional development, but the indirect effect through the gradual increase in competition, the improvement of supply and the displacement of established companies. Interestingly, their study for Germany, considering the years 1983 to 2002, shows the maximum contribution to employment creation also after a period of eight years.

Table 5.2: Estimation results VAR model for 1, 2, and 3 two-year time lags, full sample

	All				
	Model (Ia)	Model (Ib)	Model (IIa)	Model (IIb)	Model (III)
	1 lag	1 lag	2 lags	2 lags	3lags
Equation (5.3a): $U_t - U_{t-4}$					
$SE_{t-4} - SE_{t-8}$	-0.055	0.130	0.404	0.381	-0.063
	(0.225)	(0.287)	(0.323)	(0.415)	(0.319)
$SE_{t-8} - SE_{t-12}$			-0.491*	-0.790*	-0.303
			(0.286)	(0.431)	(0.320)
$SE_{t-12} - SE_{t-16}$					-0.656**
					(0.247)
$U_{t-4} - U_{t-8}$	-0.055	-0.050	-0.088	-0.099	-0.322***
	(0.099)	(0.114)	(0.111)	(0.131)	(0.097)
$U_{t-8} - U_{t-12}$			-0.247*	-0.033	-0.058
			(0.137)	(0.193)	(0.137)
$U_{t-12} - U_{t-16}$					-0.712***
					(0.118)
Constant	-0.907*	0.062	0.200	-1.820***	-1.500***
	(0.537)	(0.592)	(0.581)	(0.628)	(0.448)
Year dummies	Yes	Yes	Yes	Yes	Yes
Observations	115	92	92	69	69
R^2 adj.	0.270	0.290	0.345	0.361	0.683
p-value	0.807	0.652	0.216	0.192	0.002
Granger-causality test					
Equation (5.3b): $SE_t - SE_{t-4}$					
$U_{t-4} - U_{t-8}$	0.006	0.033	0.047	0.058*	0.065*
	(0.035)	(0.037)	(0.034)	(0.034)	(0.037)
$U_{t-8} - U_{t-12}$			-0.154***	-0.196***	-0.196***
			(0.042)	(0.051)	(0.052)
$U_{t-12} - U_{t-16}$					0.032
					(0.045)
$SE_{t-4} - SE_{t-8}$	0.493***	0.622***	0.440***	0.439***	0.464***
	(0.079)	(0.092)	(0.099)	(0.109)	(0.121)
$SE_{t-8} - SE_{t-12}$			0.297***	0.381***	0.368***
			(0.087)	(0.114)	(0.121)
$SE_{t-12} - SE_{t-16}$					0.008
					(0.093)
Constant	-0.714***	-0.073	0.076	-0.038	-0.054
	(0.189)	(0.191)	(0.178)	(0.165)	(0.169)
Year dummies	Yes	Yes	Yes	Yes	Yes
Observations	115	92	92	69	69
R^2 adj.	0.267	0.348	0.456	0.512	0.501
p-value	0.862	0.378	0.000	0.000	0.001
Granger-causality test					

Notes: Population weighted vector autoregressive model. Robust standard errors in parentheses. Coefficients for year dummies are not reported. *** p<0.01, ** p<0.05, * p<0.1.

Looking at how this effect varies by gender (upper panels in Table 5.3), we find that male self-employment affects employment growth somewhat faster, i.e. after the mentioned eight-year lag, than does female self-employment where a significant effect can only be found after a twelve-year lag. This is an interesting result because, for example, Conroy and Weiler (2016) point out in their study on employment growth that there are significant differences between male- and female-owned firms for the years 2000 to 2007 in the USA. The authors argue that gender differences in general employment growth may especially depend on industries, sales and the share of employer and non-employer firms. The differences found here in the time lag after eight and twelve years make further analysis of the long-term differences in employment growth between male and female firms therefore necessary.

Table 5.3: Estimation results VAR model for 1, 2, and 3 two-year time lags, by gender

	Male self-employment					Female self-employment				
	Model (Ia)	Model (Ib)	Model (IIa)	Model (IIb)	Model (III)	Model (Ia)	Model (Ib)	Model (IIa)	Model (IIb)	Model (III)
	1 lag	1 lag	2 lags	2 lags	3lags	1 lag	1 lag	2 lags	2 lags	3lags
Equation (5.3a): $U_t - U_{t-4}$										
$SE_{t-4} - SE_{t-8}$	0.039	0.252	0.604*	0.668	0.016	-0.055	0.060	0.038	-0.143	-0.181
	(0.239)	(0.313)	(0.323)	(0.421)	(0.345)	(0.164)	(0.210)	(0.270)	(0.356)	(0.264)
$SE_{t-8} - SE_{t-12}$			-0.653**	-1.035**	-0.475			-0.071	-0.048	0.074
			(0.278)	(0.411)	(0.322)			(0.229)	(0.349)	(0.264)
$SE_{t-12} - SE_{t-16}$					-0.585**					-0.505**
					(0.257)					(0.198)
$U_{t-4} - U_{t-8}$	-0.063	-0.059	-0.104	-0.105	-0.348***	-0.057	-0.045	-0.053	-0.079	-0.272***
	(0.100)	(0.114)	(0.109)	(0.126)	(0.102)	(0.097)	(0.114)	(0.112)	(0.135)	(0.097)
$U_{t-8} - U_{t-12}$			-0.210	0.004	-0.045			-0.317**	-0.175	-0.115
			(0.137)	(0.189)	(0.142)			(0.136)	(0.188)	(0.132)
$U_{t-12} - U_{t-16}$					-0.673***					-0.772***
					(0.125)					(0.113)
Constant	-0.847	0.135	0.256	-1.828***	-1.417***	-0.918*	0.011	0.182	-1.633**	-1.246***
	(0.529)	(0.577)	(0.564)	(0.592)	(0.453)	(0.533)	(0.582)	(0.573)	(0.636)	(0.446)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	115	92	92	69	69	115	92	92	69	69
R^2 adj.	0.270	0.294	0.369	0.391	0.665	0.270	0.289	0.321	0.331	0.675
p-value Granger-causality test	0.872	0.422	0.043	0.042	0.009	0.738	0.775	0.951	0.784	0.004
Equation (5.3b): $SE_t - SE_{t-4}$										
$U_{t-4} - U_{t-8}$	0.042	0.068*	0.076**	0.079**	0.075*	-0.044	-0.020	-0.004	0.015	0.016
	(0.036)	(0.039)	(0.036)	(0.038)	(0.041)	(0.038)	(0.040)	(0.038)	(0.039)	(0.040)
$U_{t-8} - U_{t-12}$			-0.170***	-0.222***	-0.232***			-0.109**	-0.145***	-0.144**
			(0.045)	(0.057)	(0.057)			(0.046)	(0.054)	(0.055)
$U_{t-12} - U_{t-16}$					0.068					-0.021
					(0.051)					(0.047)
$SE_{t-4} - SE_{t-8}$	0.370***	0.469***	0.352***	0.393***	0.477***	0.558***	0.660***	0.453***	0.485***	0.448***
	(0.087)	(0.105)	(0.106)	(0.126)	(0.139)	(0.064)	(0.074)	(0.092)	(0.103)	(0.110)
$SE_{t-8} - SE_{t-12}$			0.289***	0.424***	0.444***			0.249***	0.200*	0.156
			(0.091)	(0.123)	(0.130)			(0.078)	(0.100)	(0.110)
$SE_{t-12} - SE_{t-16}$					-0.115					0.082
					(0.104)					(0.082)
Constant	-0.703***	0.004	0.193	-0.095	-0.160	-0.755***	-0.231	-0.172	-0.081	-0.087
	(0.193)	(0.195)	(0.185)	(0.177)	(0.182)	(0.210)	(0.206)	(0.195)	(0.183)	(0.186)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	115	92	92	69	69	115	92	92	69	69
R^2 adj.	0.190	0.246	0.363	0.431	0.433	0.432	0.485	0.545	0.544	0.537
p-value Granger-causality test	0.255	0.083	0.000	0.000	0.000	0.257	0.613	0.065	0.032	0.069

Notes: Population weighted vector autoregressive model. Robust standard errors in parentheses. Coefficients for year dummies are not reported. *** p<0.01, ** p<0.05, * p<0.1.

Conversely, we find that an increase in the unemployment rate in the short term (after 4 years) causes an increase in the self-employment rate, a confirmation of the unemployment push hypothesis (Models (IIb) and (III) in lower panel of Table 5.2). In the short run, a lack of employment opportunities thus pushes the unemployed into self-employment. From Models (IIb) and (III) in Table 5.3, however, it

is evident that an increase in the unemployment rate only increases males' self-employment rate while we do not find any significant effect for females' self-employment rate in the short-run. After some more years, however, the unemployment pull effect is at work as a decrease in unemployment rates fosters an increase in self-employment; irrespective of the gender of the self-employed (Tables 5.2 and 5.3). Here, low unemployment rates suggest high economic growth and ample entrepreneurial opportunities, which pull the unemployed into self-employment (Audretsch et al., 2015). In the short term, on the contrary, especially personal hardship seems to be of importance, i.e. the desire to end unemployment by setting up a company of one's own. Additionally, these results show that only when a corresponding economic climate of declining unemployment has occurred in the medium to long term then people are increasingly willing to start a company due to opportunities.

In the regressions of Table 5.3, we use total unemployment rates. One may, however, argue that the effects found may also differ by the gender of the group of unemployed persons. With respect to the effect of self-employment on unemployment, there may be gender-related human resource decisions. Weber and Zulehner (2010), for example, find for Austrian start-ups that females' first hires induce an increase in the female worker share in the firm's first year. Regarding the effect of unemployment on self-employment, Saridakis et al. (2014) find in a study for the UK that only for male unemployed persons can a significant effect on the male business formation rate be found. In the case of female unemployed persons, this relationship is not confirmed. That is, aggregating the group of the unemployed by gender may hide the effect. Therefore, as a robustness check, we once again estimate the regressions from Table 5.3, but we do not only classify the self-employed according to their gender, but also the group of unemployed (see Table

5.4). However, the effects found are very similar to those in Table 5.3 – both with regard to the sign of the coefficients and their significance. In this analysis, therefore, we find no evidence that company founders only hire employees of the same gender.

Table 5.4: Estimation results VAR model for 1, 2, and 3 four-year time lags, by gender

	Male self-employment and unemployment					Female self-employment and unemployment				
	Model (Ia)	Model (Ib)	Model (IIa)	Model (IIb)	Model (III)	Model (Ia)	Model (Ib)	Model (IIa)	Model (IIb)	Model (III)
	1 lag	1 lag	2 lags	2 lags	3lags	1 lag	1 lag	2 lags	2 lags	3lags
Equation (5.3a): $U_t - U_{t-4}$										
$SE_{t-4} - SE_{t-8}$	0.016	0.177	0.561	0.650	0.003	0.068	0.211	0.166	-0.219	-0.122
	(0.249)	(0.323)	(0.337)	(0.439)	(0.367)	(0.164)	(0.212)	(0.267)	(0.333)	(0.272)
$SE_{t-8} - SE_{t-12}$			-0.719**	-1.247***	-0.620*			-0.036	0.188	0.278
			(0.293)	(0.429)	(0.348)			(0.226)	(0.330)	(0.272)
$SE_{t-12} - SE_{t-16}$					-0.519*					-0.520**
					(0.280)					(0.206)
$U_{t-4} - U_{t-8}$	-0.077	-0.090	-0.138	-0.159	-0.379***	-0.004	0.031	0.038	0.019	-0.140
	(0.102)	(0.115)	(0.111)	(0.130)	(0.108)	(0.096)	(0.112)	(0.109)	(0.123)	(0.097)
$U_{t-8} - U_{t-12}$			-0.138	0.115	0.006			-0.326***	-0.244	-0.068
			(0.146)	(0.204)	(0.159)			(0.122)	(0.153)	(0.120)
$U_{t-12} - U_{t-16}$					-0.692***					-0.583***
					(0.134)					(0.110)
Constant	-0.830	0.489	0.540	-1.931***	-1.394***	-0.933*	-0.336	-0.150	-1.472**	-1.139**
	(0.549)	(0.598)	(0.592)	(0.622)	(0.492)	(0.533)	(0.579)	(0.564)	(0.591)	(0.455)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	115	92	92	69	69	115	92	92	69	69
R^2 adj.	0.305	0.331	0.389	0.429	0.667	0.217	0.244	0.292	0.300	0.589
p-value Granger-causality test	0.948	0.586	0.042	0.018	0.012	0.678	0.321	0.787	0.795	0.033
Equation (5.3b): $SE_t - SE_{t-4}$										
$U_{t-4} - U_{t-8}$	0.053	0.080**	0.094***	0.103***	0.099**	-0.053	-0.035	-0.024	-0.005	-0.002
	(0.035)	(0.037)	(0.035)	(0.037)	(0.040)	(0.038)	(0.040)	(0.037)	(0.037)	(0.039)
$U_{t-8} - U_{t-12}$			-0.164***	-0.220***	-0.230***			-0.106**	-0.139***	-0.144***
			(0.046)	(0.057)	(0.059)			(0.042)	(0.046)	(0.048)
$U_{t-12} - U_{t-16}$					0.067					-0.011
					(0.049)					(0.044)
$SE_{t-4} - SE_{t-8}$	0.363***	0.463***	0.351***	0.413***	0.492***	0.564***	0.668***	0.461***	0.486***	0.442***
	(0.087)	(0.104)	(0.105)	(0.124)	(0.135)	(0.065)	(0.075)	(0.091)	(0.101)	(0.108)
$SE_{t-8} - SE_{t-12}$			0.295***	0.425***	0.438***			0.257***	0.217**	0.169
			(0.092)	(0.121)	(0.128)			(0.077)	(0.100)	(0.108)
$SE_{t-12} - SE_{t-16}$					-0.114					0.102
					(0.103)					(0.082)
Constant	-0.715***	0.008	0.200	-0.126	-0.194	-0.744***	-0.236	-0.180	-0.066	-0.080
	(0.191)	(0.193)	(0.185)	(0.175)	(0.181)	(0.209)	(0.205)	(0.193)	(0.180)	(0.181)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	115	92	92	69	69	115	92	92	69	69
R^2 adj.	0.197	0.259	0.368	0.446	0.448	0.435	0.488	0.552	0.555	0.552
p-value Granger-causality test	0.135	0.035	0.000	0.000	0.000	0.162	0.382	0.034	0.014	0.027

Notes: Population weighted vector autoregressive model. Robust standard errors in parentheses. Coefficients for year dummies are not reported. *** p<0.01, ** p<0.05, * p<0.1.

5.6 Concluding remarks

The link between self-employment and unemployment is of a complex causal nature. In addition to the growing micro-level literature on that relationship, it is also of great political relevance to reveal the macroeconomic unemployment–self-employment nexus, especially since employment creation is at the heart of the interest of policy makers (Thurik et al., 2008; Dennis Jr., 2011). However, the simple presumed connection between new market entries and positive outcomes, i.e. job creation, is being, at least partially, questioned (e.g. Santarelli and Vivarelli, 2007; Nightingale and Coad, 2013; Fritsch and Storey, 2014; Nightingale and Coad, 2016) as various influencing factors exist. While some scholars empirically reveal that unemployment pushes or pulls individuals into self-employment, others find that self-employment indeed contributes to a reduction in unemployment. One possible reason for these ambiguous results could be that many studies do not take into account the heterogeneity of the observed individuals. In this paper, we explicitly concentrate on the gender of the self-employed as well as unemployed persons and empirically test whether and how it affects the link between self-employment and unemployment.

The empirical results from our population-weighted VAR model suggest that self-employment exerts positive employment creation effects. Male self-employment Granger-causes employment growth somewhat faster, i.e. after eight years, while female self-employment reduces unemployment only after twelve years. This finding could, for example, result from gender differences in the industries selected for start-ups or in the ratio of employer to non-employer firms. Further, the time delay in the effect indicates that entrepreneurship does not have an initial positive impact on unemployment but can contribute to job creation only in the mid- and long-term. Whereas starting-up from unemploy-

ment does not immediately contribute to a reduction of unemployment in a country, the effect found is rather of indirect nature through a firm growth channel and, thus, an increase in demand for dependent employment. Policies that encourage individuals to take advantage of existing profit opportunities in the market and to create long-term employment effects through them should therefore be implemented or strengthened.

Additionally, we find that, in the short-run, increasing unemployment rates push males into self-employment. Given the fact that women are under-represented in the self-employed, this result could justify the initiation start-up incentives for women out of unemployment. In the medium-run, however, our results are evident of an unemployment pull effect, that is, a decrease in unemployment rates fosters an increase in self-employment; irrespective of the founders' gender.

Appendix to Chapter 5

Table 5.5: Summary statistics

	Self-employment			Unemployment		
Country	Total	Males	Females	Total	Males	Females
Australia	19.0	23.0	14.1	6.7	6.7	6.6
Austria	14.1	15.6	12.2	4.9	4.9	4.9
Belgium	15.8	18.1	13.0	7.9	7.1	9.1
Canada	15.7	19.2	11.7	8.0	8.4	7.4
Denmark	9.3	12.4	5.8	6.2	5.8	6.6
Finland	14.5	18.9	9.7	10.4	10.8	10.0
France	12.2	14.9	8.8	10.2	9.4	11.2
Germany	11.1	13.4	8.3	7.6	7.4	7.8
Greece	39.6	42.0	35.9	13.4	10.2	18.2
Iceland	16.0	21.5	9.6	4.0	4.1	3.9
Ireland	18.9	26.2	8.5	9.3	10.1	8.3
Italy	26.8	30.5	21.0	10.0	8.2	12.7
Japan	16.4	16.5	16.3	3.9	4.1	3.8
Luxembourg	9.1	9.8	7.9	4.0	3.4	4.9
Netherlands	13.3	15.4	10.8	5.0	4.4	5.8
New Zealand	18.7	23.0	13.5	6.1	6.1	6.2
Norway	8.6	11.4	5.3	4.1	4.4	3.8
Portugal	24.8	26.9	22.5	8.1	7.3	8.9
Spain	20.0	22.4	16.6	17.3	14.8	21.3
Sweden	11.2	15.7	6.3	7.3	7.7	6.9
Switzerland	16.7	18.3	14.6	3.8	3.4	4.2
United Kingdom	13.6	17.9	8.6	6.7	7.4	5.8
United States	11.3	13.8	8.2	6.0	6.2	5.8

Notes: The shares are calculated as the number of total (male/female) self-employed (unemployed) persons.
Source: World Bank (2017)

Chapter 6

Concluding Remarks

As has been discussed in this dissertation, the interrelationships between unemployment, self-employment and start-up incentives for unemployed persons has neither theoretically nor empirically been conclusively clarified so far and only selected research questions on this topic were addressed in the Chapters 2 to 5. This dissertation, thus, concludes with the following monologue from "The Good Person of Szechwan" by Bertolt Brecht (2016). It is to be understood as an invitation for further research on these interrelationships and, in particular, the reduction of unemployment:

"THE PLAYER: [...]
We for our part feel well and truly done.
There's only one solution that we know:
That you should consider as you go
What sort of measure you would recommend
To help good people to a happy end.
Ladies and gentleman, in you we trust:
There must be happy endings, must, must, must!"

— Brecht (2016, p. 185)

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